WILL IT FIT? CONSUMER DECISION MAKING IN ONLINE SHOPPING ENVIRONMENTS

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WILL IT FIT? CONSUMER DECISION MAKING IN ONLINE SHOPPING ENVIRONMENTS

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SUMMARY

Clothing purchases represent the largest selling category on the internet at $13.6 billion (US Census, 2008). At the same time this category is associated with extremely high return rates estimated at 14-50%, almost twice as high as return rates for most other categories (Barbaro, 2007). This has negative implications for consumers and retailers as the cost of returns and lost consumers is extremely high. The purpose of this research is to examine if human models that allow online consumers to visualize clothing products can improve consumers' ability to make accurate online clothing "fit" decisions, improve their satisfaction with their choices, and reduce the likelihood of returns.

Three types of research were conducted. Interviews of retailers were conducted to gain insights on the retailers' perspectives of the factors that affect a consumer's ability to make accurate size decisions. Results from the interviews suggest that the visual presentation of the clothing on a human model is an extremely important tool for consumers to make fit decisions. These interviews also suggest that the visual image of the clothing not only affects a consumer's ability to make fit decisions, but it also has an impact on the consumer's perceptions of brand and product quality.

An experiment was then conducted to compare alternative clothing model visualizations to assess effects on fit satisfaction, return likelihood, brand and quality perceptions. In the experiment participants utilized a mock-web interface to make a purchasing decision and once the purchase was made the participant tried on the article of clothing selected. The experiment was devised to understand which type of clothing representation allowed consumers to make the most accurate fit decisions, or in other words be the most satisfied with their purchase. Four different clothing presentations were used: the clothing laying flat with size guide information, the clothing presented on a thin model, the clothing

presented on an average sized model, and the clothing presented on multiple models of various sizes. Results show that expert consumers make better fit decisions, as measured by consumer fit satisfaction and intention to return the chosen product, when viewing clothing on average size models that approximate the average size woman whereas novice consumers' judgments are improved by using images of clothing that are visually represented on no model. However, when utilizing object measures of fit, to gain an understanding of how well and article of clothing is related to the body, experts make better objective fit decisions when clothing is presented on multiple models of various body types and novices make better objective fit decisions when clothing is again presented lying flat on no model. Although preliminary interviews suggested that using average models would have negative implications for brand image and quality perceptions, experimental results show no such negative effects.

To ground the results from the mock experiment in current practices a content analysis was conducted. The content analysis allowed for a greater understanding of product visualization methods used by clothing retailers today and their affects on consumer behavior. An analysis of the different methods of clothing representation and their impact on sales, consumer satisfaction, and purchase intent was conducted. Result show that sites that utilize average sized models gain significantly higher purchase intent scores. Additionally, sites that utilize average size models versus thin or plus sized models enjoy marginally significant higher revenues and consumer satisfaction ratings.

In analyzing the results from both the experiment and the content analysis it is clear that the use of an average size model in online clothing visualizations could significantly reduce return rates and increase purchase intentions, thus significantly increasing profits.

CHAPTER I

INTRODUCTION

STATEMENT OF PROBLEM

The internet is a continually growing medium for commerce. Advances in technology, most importantly, advances in internet access and speed has made the online shopping experience easier to obtain and more enjoyable for online shoppers. However, these advances in the online retail channel have forced many retailers to reanalyze their multi-channel strategies. It is important that multichannel retailers achieve a seamless integration of their brand across all channels and that consumers receive a holistic experience. While there are many advantages to online shopping the inability to "touch-and-feel", to get products immediately after purchase, and the inconvenience of returning products can often be significant enough issues to make a potential online shopper reconsider the decision to purchase again. These issues continue to plague retailers and make it difficult for retailers to create one holistic experience. Additionally, consumers who have a poor experience online connect their dissatisfaction with the brand which will have a negative impact on all of the retailer's channels.

Despite the issues that plague the online retail experience, U.S. online retail sales totaled $133.6 billion in 2008, according to the U.S. Commerce Department. Online clothing represents the biggest category of sales in revenue at $13.6 billion (US Census Bureau, 2010). Additionally, online clothing sales almost double the sales of clothing in-store at $13.6 billion (US Census Bureau, 2010). In spite of the significant growth in online clothing sales return rates for clothing purchased over the web are the highest of any online retail sector. Return rates for online clothing purchases range from 14-50% depending on the style and how fashion-forward the item is (Barbaro, 2007) Return rates for all online clothing sales, from casual wear to high fashion, are two or three times

higher than in-store averages (Styku, 2010). High return rates force retailers to take on the cost of restocking and reselling merchandise, with an estimated $100 billion lost annually (Blanchard, 2005). The top reasons for clothing returns are fit, color, and fabric, with the number one cited reason being fit (Alexander et al., 2005; Barry, 2000; Catalog Age, 2002; Styku, 2010; Trebilcock, 2001). Additionally, the most common reason for not purchasing via the Internet is the uncertainty of fit and size (Beck, 2005).

It is extremely difficult for consumers to identify an article of clothing with satisfactory fit. In a study conducted by Consumer Reports women reported trying on as many as 20 pairs of jeans before finding a pair that fit (Consumer Reports, 1996). Finding the right size is an extremely difficult process. This could be because the numerical size on the size label of clothing is highly variable from company to company and has no direct relationship with any part of the female body. Consumers use this size label as a primary method of selecting a garment to fit their bodies. In the 1940s the Federal Trade Commission and the Department of Commerce established voluntary size standards (Alexander, 2005). However, most apparel companies ignore these standards and use their own method of sizing garments. Most companies instead, base their sizes on their target market and some companies even alter sizes to satisfy their consumers' psychological need to feel slimmer. Research done by Consumer Reports found a 3-inch variation in the waist measurement of ten brands of women size 10 pants (Consumer Reports, 2005). Sizing has become a component of brand identity making a numerical size label an arbitrary tool for consumers to identify fit. The sizing dilemma creates issues for consumers and makes trying on clothing a key indicator for fit decisions. Online retail environments, while advantageous in many ways, lack this essential ability to try-on and "touch-and feel" clothing products. Thus, consumers are left with inadequate information to make sizing decisions and are forced to revert to a strategy of trial and error or guestimation. Williams (1998) found that a company that could deliver

satisfactory apparel fit to the consumer would in return gain consumer loyalty. Online retailers are at a loss when it comes to providing consumers with appropriate information to make satisfactory fit decisions, and thus these retailers are dealing with extremely high return rates and lost consumers.

The present study was designed to find a solution to the sizing dilemma that plagues online retailers. The lack of physical interaction in the online shopping environment forces online consumers to rely on visual and textual product representation as their main source of information to make purchasing decisions. Visual images can be very powerful decision making tools as they can make certain information more salient or provide a context for evaluating focal information (Lurie & Mason, 2007). Past research has also found that successful visual and verbal product representations can positively affect consumer attitudes and purchase intentions as it allows consumers to gain a deeper understanding of the qualities of the product and how it might look on their own bodies (Kim & Lennon, 2008). However, current return rates prove that retailers present methods of visualizing clothing products are inadequate. Thus, the present research takes a deeper look at various methods of visualizing clothing products and their impact on consumer fit decisions, consumer satisfaction, and purchase intent.

SPECIFIC AIMS OF THE RESEARCH

The present research focuses on online product representation with the goal of identifying if the size of the human model used to present the clothing can affect a consumers' ability to make accurate size decisions without negatively impacting brand and product quality perceptions. By improving consumer decision making these solutions will also potentially improve customer satisfaction and comfort with online retail environments. Primarily, this study focused on answering the following questions:

1. What do retailers believe is the best method of visualizing product information to improve consumer size decisions and reduce return?
2. What size model allows consumers to make the most accurate fit decisions?
3. In practice which types of product visualizations are associated with high purchase intention, consumer satisfaction, and revenues?

These questions will be addressed throughout the study. Question one is addressed through interviews with retail experts, question two is addressed through a mock-retail experiment; question three is analyzed through a content analysis. This study is focused on discovering a simple solution that can improve consumers' abilities to make accurate size decisions despite their inability to physically try on the product. An improvement in consumer fit decisions will reduce return rates and provide retailers with the power to create a more holistic brand and service experience across all retail channels.

SIGNIFICANCE OF THE RESEARCH

Clothing returns plague retail businesses as well as consumers. The cost of return is high for manufacturers and retailers. Consumers also avoid online shopping because of high shipping costs and the large inconvenience that product returns cause. Retailers have attempted to battle the issues of return by adopting innovative web technologies, altering product images, and manipulating their return policies. However, these are not ideal solutions and create additional problems.

Retailer's actions for the past ten years have made it extremely apparent that discovering the optimal return policy is no easy task. Companies like Gap and Zappos have experimented with lenient return policies to increase consumer confidence, but have

quickly found that lenient polices can have significant affects on their bottom line (Northrup, 2009). A lenient return policy gives the consumer more flexibility in their decision as it reduces their cost of changing their decision, but, it is clear that return policies can have an adverse affect on business operations. Other companies, like Lands End, Lane Bryant, Sears, and Adidas have tried innovative online fit technologies, like My Virtual Model, to battle the issue of poor online consumer fit satisfaction and high return rates. However, Lane Bryant reported removing the technology only after a year because consumers no longer used it (Lane Bryant, 2005). These innovative solutions may be too time consuming and inaccurate to provide consumers with the solution that they desire. Additionally, these web technologies require high investments with no assurance or limited empirical research to justify their benefit. The present study can provide retailers and consumers with a simple solution to the online clothing fit issue.

Many of the issues online retailers face occur because of mismatch of perceptions and expectations from the online shopping experience to the home product examination. Thus, this research was designed to examine consumer decision making and consumer behavior during and after their online purchase. Previous research has focused on the online purchase experience, without taking into account the experience a consumer goes through once they receive the article of clothing they have purchased. Consumers make online purchase decisions with incomplete information and must reanalyze their decision once they receive the product and are able to try-on and "touch-and-feel" the product, thus providing them with more information to make their decision. It is important to gain a complete perspective of the entire online consumer shopping experience from purchase to examination to decision to return. This study can provide a solution for retailers that can improve consumers' abilities to make accurate fit decisions, thus reducing return rates and improving consumer satisfaction, with a minimal cost investment.

CHAPTER II

RETAILER INTERVIEWS

PURPOSE

Interviews were conducted to gain an understanding of retailers' perspectives on the factors that affect a consumer's ability to make accurate size decisions. Exploratory research of the current fashion retail industry provided a deeper understanding of the real life fashion consumer and provided a realistic understanding of the sizing dilemma. Past research primarily focused on the use of mock experiments as a method of analyzing consumer decision making and consumer behavior. However, the online shopping industry is rapidly changing and transforming to stay competitive and meet even more demanding consumer needs. Additionally, past research was conducted simply from the perspective of the consumer and not from the perspective of the retailer. Apparel companies are continuously struggling with their multi-channel strategies and are looking for new ways to create a holistic brand image and matching service quality across all channels. Thus, it is important to gain a current perspective of the industry to expand on previously defined models of consumer decision making to address retailers' needs and concerns.

The insights gained from the interviews were used to establish the important factors that affect consumers as well as retailers. The interviews led the research study and established the focus of the research.

METHOD & PROCEDURES

Nine experts in the apparel industry were interviewed. Experts were interviewed because of their broad knowledge of apparel consumers and current retail practices. Experts were chosen from a variety of apparel companies and from various positions in online retail

channels or traditional brick and mortar retail channels. Of the nine experts 5 had experience working with national chains, 4 had experience working with specialty retailers, and 1 also had experience working with department stores. Four of the experts work on managing the e-commerce activities, two of the experts work as sales associates in the retail locations, two of the experts act as buyers, and another expert manages store design. The reason experts were chosen from both types of retail channels was to gain an understanding of the different factors that affect consumer behavior in the two types of retail environments. It also allowed for a greater understanding of consumer behavior during the online purchasing phase and during the try-on phase.

Interviews lasted an hour and were conducted using only open ended questions guided by the response and the expert's experience rather than using a standard set of questions. Open-ended questions were used to allow respondents to include more information, including feelings, attitudes and their personal experiences. See Appendix 1 for a sample of some questions used during the experiment. This provided richer responses that led to deeper insights, utilizing the method of alternative point of view. By looking at the issue of consumer fit decisions from several various viewpoints this research led to a deeper understanding of the factors involved in the issue from the consumer's and retailer's perspective.

ANALYSIS

The data that was gathered from the interviews was interpreted to gather unique insights. The data was not analyzed using a coding method because a standard set of questions was not used in all interviews. Because the questions were not standardized, the level of ambiguity is high, and thus it is necessary to understand the particular context of each interview, and the specific characteristics of each respondent. Instead of utilizing a

coding method the data was analyzed using a method of abstraction and generalization. The empirical results were translated into broader concepts based on the implied importance that was communicated from the interviewee. The results were also arranged to represent patterns and focus on the structures that were common across multiple interviewees. Data was gathered by asking the experts to describe their observations of how consumers make clothing purchase and fit decisions and the factors that alter these behaviors. Experts were also asked to describe the effects that consumer behavior had on the company and the company practices and strategy.

INSIGHTS

Clothing Fit Decision Making

Experts identified many factors that affect consumers' clothing size decisions. Some of these factors included the online images used to present the clothing, the ability to zoom in and see details, the ability to see multiple images of the product, detailed product descriptions, consumer ratings and assistance from friends and family in the purchase decision. One expert indicated that consumers commonly utilize other opinions as a source of information in assessing apparel fit. This expert indicated that sales associates in brick and mortar stores would try on new articles of clothing in the store and then assist consumers by indicating what body types the clothing fit best. While, this type of information is beneficial in store environments, online retailers instead utilize consumer ratings and fit information provided through detailed product information. Some online retail channels utilize information gained from returns to provide more specific information about fit on the website. However, an expert indicated that not all consumers take the time to read this detailed product information and some information is difficult to obtain as many retailer are not also the manufacturers of the product. Consumer ratings are another form of information utilized by consumers to gain an understanding of the

product. However, consumer ratings are out of the retailers' control, thus it can be difficult to obtain enough ratings. It is also difficult to monitor and control the content delivered through consumer ratings.

Despite the many factors that affect consumer fit decisions, many experts agreed that product visualizations were the most effective tool for consumers to make fit decisions. Because online retail environments don't give consumers the ability to "touch-and-feel" the product, online retailers must make this type of information come through with images. In fact, multiple experts identified Zappos.com as a leader in the online retail industry because of the quality and assortment of images provided on the site. An expert who worked as an online solutions analyst stated that:

> *I think the photography of the product really makes a difference. The product representation through the use of images is so important. Really that is your only substitute for seeing the product in person.*

The Power of Human Models

Experts strongly believed that seeing the clothing on a person rather than a mannequin is significantly more beneficial for the consumer. Presenting clothing on a human allows consumers to see the fit and the how the product actually looks on a person. Another expert indicated that the use of virtual models on sites like LandsEnd.com is cool, but the accuracy of the visualizations is questionable.

One expert indicated that certain high fashion brands have very strict requirements on the method of clothing presentation used for their brands. They even have strict requirements on the model that is used to represent their clothing, they refused to use the

models provided by the larger retail channel and demanded that their self-selected models be used to represent their clothing products. This expert believed that the strict model requirements could be because the designer was trying to establish a standard method of visualization across multiple retail channels and multiple products, thus allowing the consumers to have a common tool for making decisions. These actions taken by high fashion brands indicate the importance of the product images as well as the human model used in representing clothing products.

Estimation and the Role of Visualizations

Despite retailers understanding of the importance of a human model as a tool for consumer decision making, a majority of catalogs and retailers use models that are sized well below the average woman's body type. Multiple experts felt that if the model more closely resembles the body type of the consumer that the consumer should have more confidence in their purchase decision. An expert who worked as an ecommerce manager stated that:

> *I think that there SHOULD BE a correlation between seeing clothes on a model that more accurately represents your body type and feeling more confident that the fit will work for you. However, I don't see that proven out by most of the online retailers and don't even see it in bricks-and-mortar, the mannequins and models in posters are all tiny sizes.*

An expert indicated that most women don't look like the model used to present the clothing and that having models with various body types would

definitely assist consumers in their fit decisions. But this theory has yet to be tested in online retail channels or in brick and mortar stores.

Model Attractiveness & Purchase Intent, Brand Perception, & Quality Perception

The reason the above theory may have never been tested could be because many experts found a direct relationship between the physical attractiveness of the model used and sales. Physical attractiveness is believed to have a strong link with body size. Past research had found that thin models are perceived as more attractive than larger women (Fallon & Rozin, 1985; Rozin & Fallon, 1988). Experts observed that if an article of clothing wasn't selling and the model was changed then there would be a change in sales. However, multiple experts also observed consumer frustration when the human model used was "too skinny". Sales would decrease if the human model was "too skinny" and consumers would send complaints via email to the online retailers about their dissatisfaction with the size of the model. A retailer who worked for a trendy national retailer that focused on the younger demographic stated that:

> *Regarding the customer's perception of model and clothes, I can say this from experience…we saw a direct relationship between the model used and the sales of the clothes. If we shot clothes on a sexier model, they sold better. If we pinned the clothes so they fit the model's body type, they sold better. If the clothes weren't selling on one model and we changed to a more accepted model, they sold better. There was a direct correlation between how pretty/sexy and the model used was and the sales. When we used too-skinny models, the sales suffered. We didn't use larger size models.*

Experts believe there is an ideal size for models in presenting clothing online, this size is a thin model, but not a model that is too thin or looks underweight. Most retailers use a model that wears a size 4 on their online sites. Fashion companies tend to use thinner and sexier models to create a brand identity and to satisfy a consumer's psychological needs of an ideal self image. One expert identified that consumers look at the model with a sense of aspiration and associate the model with their ideal self-image.

Multiple experts also believed that the model's attractiveness will have an effect on brand perceptions. One expert believed that a larger or average size model may negatively affect the brand image. This expert believed this is because high fashion brands never use large or average size models and stated that:

> *I unfortunately do believe that larger or average size models do negatively affect brand perception. I think there is a perception that heavier models mean a lower quality brand and I think that stems from the fact that you never see larger models in high fashion or even in medium range fashion.*

Another expert observed that one retailer utilized mannequins rather than human models to present the apparel online. This expert believed that the use of the mannequins caused consumers to perceive this brand to have a lower quality. Interestingly, this expert made this observation on a brand that is sold on a high fashion retail channel.

Multiple experts indicated that there is a trend in the fashion industry to celebrate average and larger size women and that this trend may affect consumer perception and consumer behavior. Some examples of this trend include Dove's "Real Beauty" campaign, Glamour magazines emphasis on body image through articles like "These Bodies are

Beautiful at Every Size", and Levi's recent marketing campaign that utilizes models that are closer to average size women. In making size decisions fashion trends and cultural influences effect a consumer's perception of the extrinsic qualities of fit. Thus, cultural and fashion trends toward larger size models could potentially impact consumer perception of fit. Those consumers who are aware of current fashion trends may be impacted differently than those consumers who do not stay up to date with changing fashion trends. However, experts believe that the practice of using of thin models has existed for so long, that it will be difficult to change the correlation between thin models and high brand perception. One expert who had experience working for a national chain stated that:

> *There is a backlash against the use of thin models, like recent article featuring average and plus size models in Glamour. But I don't think the backlash is strong enough to change a perception that has been built over several decades. What might support this would be something like Patagonia brand (which isn't considered fashion) which uses real people to sell its apparel, or Levi's recent marketing campaign which is pretty close to real people. I know that Dove's 'real beauty' campaign has been very accepted and has increased sales of their beauty products. I don't know how this translates into apparel, however. I suspect it will take a long time to undo the perception that has already been built up.*

However, one expert indicated that consumers correlate brand perceptions with product expectations. When consumers receive products that do not correlate with what they believed the product should be based on online representations they correlate this misperception with their feelings about the brand. Thus, based on this line of thinking

one would expect that online visualization methods that allow consumers to make more accurate predictions would create more positive correlations with the brand.

While experts believe that the size of the model may affect brand perception they don't believe it should have an effect on quality perception of the product, one expert believed that:

> *I believe there is a perception that the model used reflects the quality of the brand. When I say brand, I don't mean quality of the product. I would hope and think that the perceived quality of the product isn't tied to marketing but tied to the tangible things about the product like quality of fabric used, quality of construction, details such as lining, hardware, hems and seams, level of design and construction in the garment, and overall value for the money.*

Consumers make fit decisions based on functional and fashion related factors. Thus, the functional, or quality related factors of fit, should not be affected by the size of the model.

Body Image

Similarly to how fashion retailers alter the size label of clothing to satisfy US consumers' psychological need to be skinnier, online retailers use the model's body size as a method of also meeting this need. Body image perceptions have the ability to negatively impact consumer perceptions of clothing and have a great impact on consumer behavior. An expert with over fifteen years of experience working for popular retailers explained that:

> *I'm guesstimating that 85-90% of catalog and web apparel retailers do use models that are sized well below the average woman's body type. This is a sad perpetuation of the body type stigmas that the entire entertainment and retail industries perpetuate. But it does work. Generally speaking, most women look at models with a sense of aspiration that isn't necessarily founded in reality. They see apparel on a skinnier model and think it will make them look skinnier.*

An expert who worked in brick and mortar stores closely observed consumer behavior when selecting clothing to purchase. This expert found that many consumers were not embarrassed to express their body issues. However, she also observed that only about half the consumers would express accurate statements about their bodies, while the other half would express non-realistic issues about their bodies. Their concerns about their body would affect their choices in what articles of clothing to try on and in their purchasing decisions. Retailers believe that there is a correlation between consumer perceptions of body image and consumer behavior and purchase decisions; however the actual relationship is not yet clear.

Consumer Experience & Decision Making

Multiple experts indicated that consumer experience can affect consumer decision making. One expert indicated that new brands experience higher return rates because consumers didn't have experience with the brand and the fit of the clothes. Another expert who worked as a sales associate working closely with many consumers indicated that a majority of consumers that shop from the website are repeat consumers:

> *Consumer definitely had difficulty with a new brand that we began selling; it was difficult because no one had experience with the clothes. There were many discrepancies with sizes at the beginning and fit was different.*

Another expert who has experience working for a national chain and for an online department store indicated that a majority of consumers shop by brand because this allows them to build familiarity with the brand and confidence in their online purchases.

> *65% of our customers shop by brand. And shop from the same couple of brands. They like to identify more with the designer than the category.*

CHAPTER III

BACKGROUND RESEARCH

The findings from the interviews provided a strong understanding of the current challenges that both consumers and retailers face. In order to gain a deeper understanding of the issues that surfaced during the interviews background research was conducted. The findings from the interviews in combination with the background research led to the development of this research study and the hypothesis tested.

CLOTHING FIT DECISION MAKING

Clothing fit can be defined as the relationship between the clothing item and the body (Ashdown and Delong, 1995) and in the way that the garment appears on the wearer's body (Tate, 2004). However, clothing fit is more directly defined by the consumer who purchases and wears the article of clothing. A consumer's preference of apparel fit is very subjective and varies from person to person. Two consumers with the same height, weight, and body measurement may have very different fit preferences depending on their attitudes and the look they desire.

A study done by Ashdown and DeLong (1995) found that consumers' perception of fit is dependent on their personal preferences of the look of the garment on their body, and their perception of comfort. Personal preferences of how a garment looks on the body are shaped by current fashion trends, cultural influences, age, sex, figure type and life style (Brown, 1998). Perception of comfort is based on the consumers' tactile and visual perceptions (Ashdown and Delong, 1995).

In brick and mortar stores consumers have the ability to touch and feel and try on garments in order to assess the visual and tactile qualities of fit on their own bodies. In online shopping environments consumers don't have this ability, thus they are left with the information provided on the website to make a fit decision. Most sites include a size label with a corresponding size guide that includes body measurements to assist consumers' with their fit decision. However, Brown and Rice (1998, p.131) point out that many consumers do not know how to properly take measurements of their own bodies. Additionally, consumers have no understanding of how clothing sizes are determined and how the sizes are indicated. Thus, consumers are left with using information presented as detailed product descriptions, instructions for product usage, product presentations from different angles, images of products being used, and images of complete outfits to make clothing fit and purchase decisions in online shopping environments (Allen, 2000; Then and DeLong, 1999).

The largest disadvantage with online shopping is the inability to physically examine items before purchasing (Alba et al., 1997; Internet Retailer, 2005b; Retail Forward, 2001). As indicated by the interviews, the visualization of the product is believed to be the most effective tool for consumers to gain an understanding of clothing fit. Researchers would agree with the retailers, in fact in a study conducted by Chau and Tam (2000) the research indicated that the use of visual images was more effective and efficient compared to the use of text. Images of apparel products are a primary tool for consumers to judge how an apparel item may look on his/her body. Kim, Fiore, & Lee (2007) found that by giving a consumer the ability to view a product from a variety of viewpoints a consumer is able to more clearly visualize how they might look in the item of clothing.

Online retailers have tackled the size issue by providing higher quality images, zoom features, and images from various viewpoints. All have proved to be successful methods of improving the amount of information provided to consumers; however none have created significant improvements in consumer size decisions.

Online retailers are turning to advanced product visualization technologies to battle this issue. These technologies utilize 3-D images, web cams to create a mirror-like interaction, virtual models, digital images, and zooming technologies to simulate the in-store physical examination. Virtual Model (VM) technology, illustrated in Figure 1, extends the virtual inspection concept by allowing customers to build a virtual self and then try on virtual clothes in a virtual dressing room. The My Virtual Model utilizes a virtual avatar to represent the consumers' body. The original version of My Virtual Model lacked realism and left many decisions up to the user, thus a more realistic system was launched in 2004. In 2008, a new technology that improves on the My Virtual Model was developed by a Japanese company, Avielan. In this system a consumer uploads a photo and a virtual avatar-like image is developed based on the user's photo the consumer then applies selected styles to the image with striking realism (Figure 2).

Figure 1: My Virtual Model

Old My Virtual Model

New My Virtual Model

Figure 2: Avielan Online Technology

Underlying these innovations appears to be an untested assumption that consumers will have more confidence in the online shopping experience, and be more likely to purchase, when they can see themselves wearing the item, and an associated belief that informed customers are less likely to return products afterwards (Beck, 2005). In an experiment to compare the impact of the virtual model (VM), with a more basic online catalog, results indicate that VMs are potentially valuable when a customer is concerned with self-image, and considerably less valuable when concerned with functionality (Smith, Johnston, Howard, 2009). Additionally, a study conducted to evaluate the effectiveness of a 3D online virtual clothing shopping tool found that the overall accuracy of the virtual simulation tool was moderately good but not to the extent that the participants could perform all the important aspects of a clothing fit evaluation. The major difference between the fit on the virtual model and the fit on the body was inaccurate material representations, the fabric simulation was lying smoothly on the virtual model, but many wrinkles were visible on the body (Kim, 2009). These studies indicate the importance of realistic visualization. Clothing fit decisions are based on the look and feel of an article of clothing on the body. Without gaining an understanding of how an article of clothing would truly lay on a realistic body it is difficult for consumers to make accurate decisions.

THE POWER OF HUMAN MODELS

Both retailers and researchers agree that product images are a very powerful tool in providing information for consumers to make clothing fit decisions. Yet the amount, type, and method of communicating through images vary from retailer to retailer. Retailers still do not have a complete understanding of the best methods of communication to elicit consumer confidence and improve consumers' abilities to make accurate fit decisions in online purchasing decisions.

Research by Kerfoot et al. (2003) found that the manner of presentation, in a brick and mortar store, such as folding, hanging, or using a mannequin influenced consumer desire for the item, thus influencing purchase intention. In their research they found that using a mannequin generated positive feelings, while a folded garment was received negatively. Research by Then and DeLong (1999) found a similar effect in online shopping environments: 89% of respondents preferred the presentation of the apparel product on a realistic human model versus a mannequin or presented on a flat surface. Research by Kim et al (Kim, Kim, & Lennon, 2009) supports this finding and found that using a human model to present apparel online is more effective than a flat presentation in generating positive emotional response leading to higher purchase intention. Both researchers and retailers agree that a human model is the most powerful method of presenting clothing. The use of a human model allows consumers to gain a realistic understanding of fit as they are able to visualize tightness, length, stretch, and folds in the fabric. This information allows a consumer to visualize how the clothing might fit them and based on their own personal preferences of fit make a more accurate assessment. Thus, the above research strongly emphasizes the importance of visual images and the importance of a realistic depiction. These research findings lead to the first hypotheses:

> H1: Presenting clothing online on a human model will allow consumers to make more accurate clothing size decisions.

ESTIMATION AND THE ROLE OF VISUALIZATIONS

While previous research indicates that the use of a human model can lead to higher purchase intent there is no indication on what size model to use. A typical fashion model ranges from a size 0 to a size 4 and weighs 23% less than the average woman with an

average BMI of 16.3 (Terzieff, 2006). The average U.S. woman weighs 162.9 pounds and wears a size 14 (Vesilind, 2009). Thus, there is a great disconnect between the human model in the online image and the consumer. The disconnect between fashion models and the average size consumer could potentially decrease the value of the online image as it could potentially reduce a consumers ability to use the image as a tool for make clothing fit decisions. Retailers believe that consumers would be able to make more accurate size decisions if the model had a body size that was more similar to the consumer's body size. Additionally, research conducted on obesity validates this belief. It was discovered that participants were able to accurately identify the image from a group of images of people with different body sizes that is most similar to their own body size. In fact, correlations between the BMI of the image selected and the participants BMI were extremely strong 0.94 for men and 0.86 for women ($p < 0.001$) (Harris, Bradlyn, Coffman, Gunel, & Cottrell, 2008). These results indicate that consumers should be able to successfully select the image of a model that most correctly depicts their own body size. By doing so they should also be able to more accurately assess the fit of clothing if provided an image of a model that more accurately depicts their own body. By providing consumers the ability to select a model from a range of models of various body sizes, retailers who sell to consumers with a variety of body sizes will be able to accommodate more individuals more effectively. Because fit is the number one reason for clothing returns, a consumer's ability to make more accurate size estimations should have a positive effect on return rates. This has great implications for the online clothing industry and leads to the prediction that:

> H2: Presenting clothing online on a human model with an average versus a thin body size will allow consumers to make more accurate clothing size decisions.

H3: Presenting clothing on multiple models with various body sizes versus a single model will allow even more consumers to make more accurate clothing size decisions.

MODEL ATTRACTIVENESS & PURCHASE INTENT, BRAND PERCEPTION & QUALITY PERCEPTION

Marketers and retailers have used attractive women to draw attention and promote their brands and products for decades. Research suggests that these attractive models generate positive affect (Kallen and Doughty, 1984) that would be transferred to consumers' attitudes toward the brand or product, and result in greater purchase intentions (Lutz, 1985). Based on the responses gathered from the interviews altering the model size to match the average size woman may positively impact consumer size decisions but could potentially have a negative impact on purchase intent and brand perception because of the perceived unattractiveness of the larger models. Previous studies that have focused on body weight as a measure of attractiveness found thin women to be perceived as more attractive than larger women (Fallon & Rozin, 1985; Rozin & Fallon, 1988). Most studies report that desirable personality traits are assigned to thinner rather than heavier figures (Jackson, 1992). Some of these personality traits include beauty, greater attractiveness, youth, health, and personal as well as professional power (Polivy, Garner & Garfinkel, 1986). Because of the strong correlation between model size and attractiveness, these findings lead to the assumption that a thin, thus more attractive model, will lead to higher purchase intentions, and that a larger, thus less attractive model will lead to lower purchase intentions. These research findings correlate with retailer's predictions and lead to the following hypothesis:

H4: Presenting clothing online on a human model with a thin versus an average or larger body size will lead to higher consumer purchase intentions.

The effects of physical attractiveness on consumer behavior have been well researched. Marketers and retailers strongly believe that using attractive models are more persuasive and have a more positive influence on consumer attitudes and behavior (Schiffman, Benfall, O'cass, Paladino, Warn and Kanuk, 2008). A study conducted by Lindquist and Sirgy (2006) found that sources considered attractive by target audiences are more persuasive than those that are unattractive (Lindquist and Sirgy, 2006). In addition to being persuasive physically attractive people are viewed more favorably on a variety of personality traits. Given that attractive people are viewed more positively and are more persuasive, it is only natural that advertisers would wish to associate their products with attractive individuals. Additionally, studies conducted by Petroshius and Crocker's (1989) and Patzer's (1983) studies found that physically attractive models used in advertising led to more favorable attitudes toward the ad. By repeatedly using attractive and thinner models in advertisements and online product communications a retailer can create associations between the positive perceptions of the attractive model and the brand. In a study conducted by Till and Busler (2000) significantly higher brand attitudes were found for pen and cologne products that were endorsed by more attractive models. The results of this study and others clearly demonstrate that attractiveness, especially physical attractiveness, is an important influence on brand perceptions (McCracken, 1989; Rossiter and Percy, 1987). Based on the past research on the significance of attractive models on brand perceptions, the following hypothesis was developed:

H5: Consumer's perceptions of the clothing brand will be more favorable when clothing online is presented on a human model with a thin versus an average or larger body size.

A consumer's perspective of apparel quality is very subjective and not easily verified (Zeithaml, 1988). There is the possibility that the presentation of the clothing on a larger model could potentially affect consumers' perceptions of product quality. The consumer closely examines the visual images and the textual product descriptions to gain a perception of product quality. However, a past research study has found that intrinsic cues are more important than extrinsic cues in consumer perceptions of quality across a wide range of apparel products (Fiore & Damhorst, 1992). Intrinsic criteria refer to product attributes that cannot be changed without changing the physical characteristics of the product (e.g., style, fabric content). Extrinsic criteria are manufacturer or retailer attributes and measurements that are part of the product attributes (e.g., price, brand name, visual presentation). Previous research has found that care procedures (McCullough & Morris, 1980), construction (Davis, 1985) and fiber content (Hatch & Roberts, 1985) to be major influencers of consumer quality perceptions. Even though there is no empirical literature exploring the direct effect of model size and quality perception, it seems likely that presenting apparel on a larger or average size model should have no affect on quality perceptions as the elements used to define quality perception will not be affected.

BODY IMAGE

Interview results indicate that body image may have an effect on consumer behavior in online clothing environments. Body image is determined by feelings of satisfaction or dissatisfaction with one's body, which includes feelings about specific body parts, and feelings about body weight (Lennon, Lillethun & Buckland, 1999). A body image survey with 3,500 women respondents indicated that women were dissatisfied with their body weight (66%) (Garner & Kerney-Cooke, 1996). Wenger (1969) found that for most women, fit preferences vary depending on the garment and the body area where they

want the garment to fit. Many women want garments to be more defining on the part of the body with which they are most satisfied. Additionally, Labat and DeLong (1990) found that female consumers are more dissatisfied with their lower bodies, including the buttocks, thighs, hips, crotch, pant length, and waist, than their upper bodies. This finding could be a key reason as to why consumers have difficulty finding pants that they perceive to satisfactorily fit their bodies. In fact, a study conducted by Garner and Kerney-Cooke (1996) found that body image is a factor of consumer satisfaction or dissatisfaction with fit. The research findings as well as the interview results led to the following hypothesis:

> H6: Consumers with higher perceptions of body image will be more satisfied with their clothing size decisions than consumers with lower perceptions of body image.

External factors, like societal messages concerning the ideal body, the fashion industry's portrayal of an " idealized figure", and industry sizing systems also have an effect on body image and consumer satisfaction of fit (Labat & DeLong, 1990). Past research has found that there is a link with thin models and negative self-judgments, including lower self-esteem and dissatisfaction with body image (Martin and Kennedy, 1993; Richins, 1991). Additionally, a recent meta-analysis assessed the results of 25 experimental studies and demonstrated that—on average—young women feel worse and are less satisfied with their appearance after exposure to thin images than other types of images (Groesz, Levine, & Murnen, 2002; Martin and Kennedy, 1993; Richins, 1991). These findings indicate that the use of a thin model in online shopping environments could cause consumers to feel more dissatisfied with their body image and as a result have more feelings of dissatisfaction with the fit of the garment, thus increasing the rate of

return of clothing products purchased online. Based on the research literature the following hypothesis was developed:

> H7: Consumers will have more favorable perceptions of their body image when clothing online is presented on a human model with an average or larger versus a thin body size.

CONSUMER EXPERIENCE & DECISION MAKING

Interviews indicated that consumer experience may also be a consumer trait that will have an effect on consumer behavior and decision making. Interviewees suggest that consumers with higher levels of experience are able to make more satisfactory purchase decisions. Past research supports this belief as it has been found that consumer knowledge and expertise of the intrinsic factors of clothing can benefit a consumer in her evaluation of fit because she is able to realistically evaluate the fabric, style/design, construction and size, taking into account her expectations of fit (DeKlerk & Tselepis, 2007). Recognition and classification are two types of processes that can become automatic for consumers who gain high levels of expertise (Hutchinson & Einstein, 2007). Both of these processes are central to making size decisions using product representations on online websites. Additionally, consumers who have greater experience with online shopping should have a greater understanding of how to analyze the information provided on the website to make more improved decisions. These consumers gain much of their experience from shopping in-store and online, thus they will have the greatest experience with current visualization methods. Currently most stores use thin models online and thin mannequins in-store to present the clothing. This leads to the following hypothesis:

H8: Consumers with higher levels of experience will make more accurate clothing size decisions when clothing online in presented on a human model with a thin versus an average or larger body size.

CHAPTER IV

ONLINE SHOPPING EXPERIMENT

PURPOSE

The purpose of this experiment is to gain a deep understanding of the effects of visual clothing representation on consumers' abilities to make accurate clothing size decisions and on consumer perceptions in online retail environments. This experiment is used to further refine the insights gained from the interviews and the literature review by quantitatively testing the hypotheses that were developed through the previous study. This experiment more specifically focuses on the effects of model size on consumer decisions and consumer perceptions. It is believed that consumers use clothing visualizations as the main source of information in online retail environments. Consumers utilize the clothing visualizations to gain an understanding of how the clothing might fit. They also make assumptions on the quality of the clothing and the brand image based on the method of clothing visualization used. The product image is the primary source of information that consumers use to perceive intrinsic and extrinsic qualities of the product. This experiment seeks to understand the correlation between clothing visualization and model size with consumer fit satisfaction, product quality perception, and brand image. This experiment also takes into account consumer characteristics like body image and consumer experience and their affect on fit satisfaction, product quality perception, and brand image. A mock online purchasing situation was created to stimulate a real-life experience and to test the above hypotheses.

METHOD & PROCEDURES

Subjects recruited for this study included women between the ages of 18 – 25 who attended Georgia Institute of Technology. These requirements were set forth in order to

obtain subjects with similar characteristics. Each subject was given a computer with a mock web interface of an apparel retail site. Subjects were then asked to purchase a pair of jeans from the mock-site by simply selecting what size they desired. Once the subject indicated their size decision they were then asked a series of quantitative survey questions. Once they finished the initial survey they were then given the pair of jeans in the size that they choose to purchase. The subjects were then asked to try on the pair of jeans. Once the subjects were given the opportunity to try on the jeans and make their own personal judgments of the jeans and the fit they were then asked to answer another survey to capture their subjective perceptions.

The experimental procedures were approved by the Georgia Tech Institute Review Board. Informed consent was obtained from all subjects (Appendix C).

EXPERIMENTAL DESIGN

Subjects

Subjects ranged from age 18 to 24 with an average age of 20. The average subject weighed 132.8 pounds, and was 5 feet, 4.9 inches tall. Subjects' height and weight were converted to meters and kilograms to compute Body Mass Index (BMI) for each subject: BMI = Weight (kg)/Height (m2). The average subject's BMI was 22.2. For adults, an ideal BMI is between 18.5 and 24.9. A person with a BMI over 24.9 is considered overweight. A person with a BMI under 18.5 is considered underweight. Five subjects had a BMI less than 18.5 and seventeen subjects had a BMI greater than 24.9. However, the average U.S. woman weighs 162.9 pounds and only eleven participants weighed more than this amount. This research utilized self-reported height and weight similarly to previous research to compute BMI (Stice & Shaw, 1994), because such self-reports have been found to be fairly accurate (Cash, Grant, Shovlin, & Lewis, 1992).

Ninety-seven subjects completed the experiment (27 with condition 1, 24 with condition 2, 22 with condition 3, and 24 with condition 4). Two subjects were excluded from the final results and analysis, one for leaving a large portion of questions unanswered; the other participant was excluded because the sizes available in the experiment did not accommodate her body type. All subjects used the internet, at a minimum, on a frequent basis. Additionally, 79% of subjects are moderately familiar to very familiar with using the internet to shop for clothing. The jeans in the study were sized using a woman's American sizing scale, sized from 2-14. Similarly 80% of subjects indicated that at least half of the jeans they own are sized using an American sizing scale.

Stimuli

The visual stimuli for this research was developed by taking pictures of women aged 20 – 30. Pictures were taken of women wearing the pair of jeans and a long-sleeved black shirt. All women wore the same articles of clothing but in an appropriate size for their body types. The lighting, background and size of every image remained constant. Pictures of the models were taken from front, back, and both sides. The images were cropped right below the chin to eliminate the face of the models. A total of seven models were chosen to represent all sizes of jeans available from 2-14. The images of the models were used for all four mock websites. The third condition was the only condition that did not utilize model photos. The visual stimulus for this condition was developed by taking pictures of the jeans lying flat. The first, second and third conditions had images of the models shown from the front, back, right side and left side. All images were capable of being viewed in a large format and a small thumbnail format. The third condition also had four images, one visualizing the front, another of the back, and then a close up of the front pocket and the back pocket. In addition to the images all four conditions included the same detailed product descriptions. The descriptions included intrinsic criteria but no

extrinsic criteria were included. The only extrinsic criteria provided would be what consumers inferred from the product image. The intrinsic criteria used in the mock websites were the original intrinsic criteria used to market the product on the retailer's website. This includes (1) sizing & fit, (2) care instructions, (3) style, (4) fiber content, (5) color, (6) closure style, (7) hem style, (8) pocket style, and (9) garment detail. However, the only condition that included size guide information was the third. The conditions used either visual information or size guide information, but neither used both. This was done to control the differences between visual information and quantitative information.

Figure 3: Case 1, Thin Model Interface

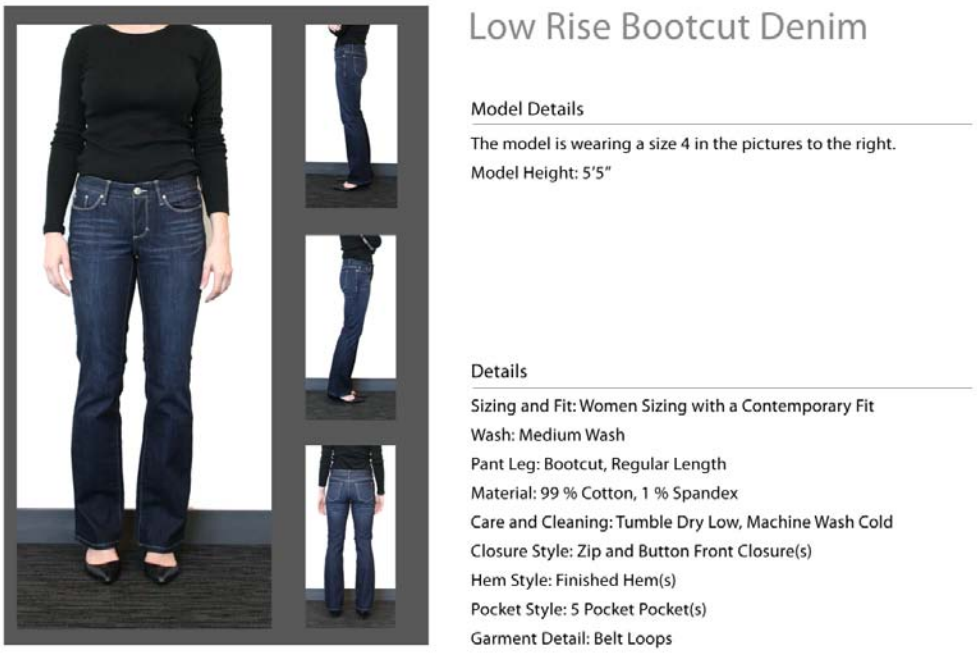


Figure 4: Case 2, Average Model Interface

Low Rise Bootcut Denim

Model Details

The model is wearing a size 10 in the pictures to the right.
Model Height: 5'5"

Details

Sizing and Fit: Women Sizing with a Contemporary Fit
Wash: Medium Wash
Pant Leg: Bootcut, Regular Length
Material: 99 % Cotton, 1 % Spandex
Care and Cleaning: Tumble Dry Low, Machine Wash Cold
Closure Style: Zip and Button Front Closure(s)
Hem Style: Finished Hem(s)
Pocket Style: 5 Pocket Pocket(s)
Garment Detail: Belt Loops

Figure 5: Case 3, No Model Interface

Low Rise Bootcut Denim

Sizing Chart

Size:	2	4	6	8	10	12	14
Waist: (inches)	26.25-27	27 - 28	28 - 29	29 - 30	30 - 31.25	31.25 - 32.75	33.25-34.75
Hip: (inches)	35.5-36.5	36.5 - 37.5	37.5 - 38.5	38.5 - 39.5	39.5 - 40.75	40.75 - 42.25	42.25-43.75
Inseam: (inches)	32.5 - 33.5						

Details

Sizing and Fit: Women Sizing with a Contemporary Fit
Wash: Medium Wash
Pant Leg: Bootcut, Regular Length
Material: 99 % Cotton, 1 % Spandex
Care and Cleaning: Tumble Dry Low, Machine Wash Cold
Closure Style: Zip and Button Front Closure(s)
Hem Style: Finished Hem(s)
Pocket Style: 5 Pocket Pocket(s)
Garment Detail: Belt Loops

Figure 6: Case 4, All Model Interface

Low Rise Bootcut Denim

Model Details

The below chart describes the size of jeans that the model is wearing and her height.

Model:	A	B	C	D	E	F	G
Pant Size:	2	4	6	8	10	12	14
Height: (inches)	5'	5'5"	5'9"	5'9"	5'5"	5'10"	5'4"

Details

Sizing and Fit: Women Sizing with a Contemporary Fit
Wash: Medium Wash
Pant Leg: Bootcut, Regular Length
Material: 99 % Cotton, 1 % Spandex
Care and Cleaning: Tumble Dry Low, Machine Wash Cold
Closure Style: Zip and Button Front Closure(s)
Hem Style: Finished Hem(s)
Pocket Style: 5 Pocket Pocket(s)
Garment Detail: Belt Loops

Attractiveness PreTest

Although the primary purpose of this research is to identify an online clothing visualization that can improve consumer fit decisions, it was important to first examine how consumers perceive the attractiveness and sex appeal of the models used in the experiment. The expert interviews literature review indicated that attractiveness and sex appeal of the model has an effect on consumer behavior and consumer perception. Thus, it was important to understand consumer perception of the attractiveness and sex appeal of the models used in the mock websites. This test included images of each model followed by a series of questions to test physical attractiveness, social attractive, and sex appeal. The test was conducted on 22 women from Georgia Institute of Technology. Participants were between the ages of 18 to 20. The experiment was given as an online survey. The images of the models used in this test were the same images used in the main study.

The data was analyzed using an ANOVA test. Although none of the images used in the experiment included the faces of the models, the results indicated that there was a significant main effect for physical attractiveness and model size. Smaller sized models had higher ratings of physical attractiveness than larger sized models ($F = 2.414$, $p = .03$). Additionally, there was a marginally significant effect of social attractiveness ($F = 1.095$, $p = .084$) and sex appeal ($F = 2.127$, $p = .054$) with model size.

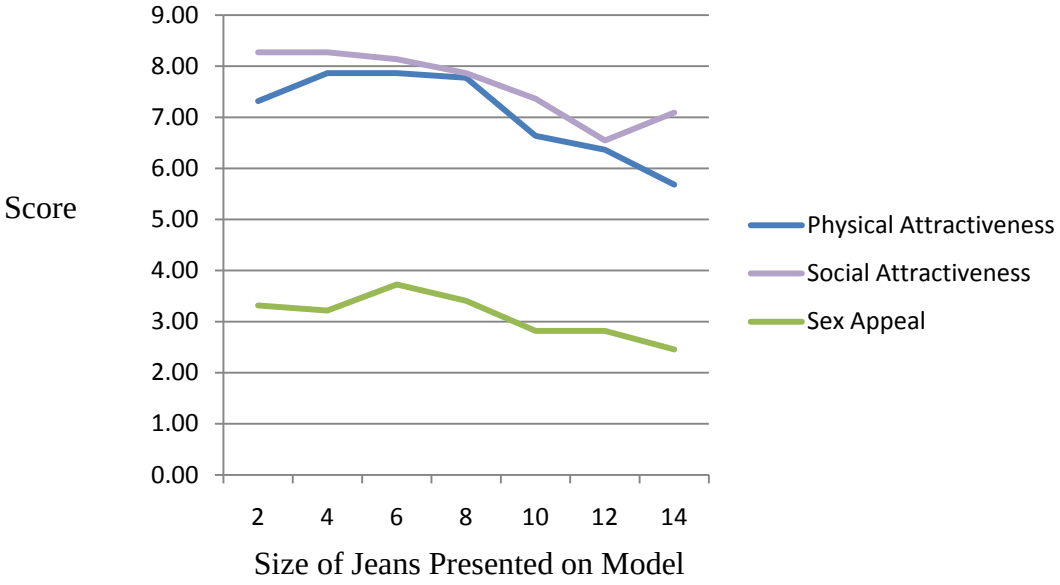
Table 1: Model Attributes

	Thin Model (Case 1)	Average Model (Case 2)
Model Size	4	10
Model BMI	21.6	25
Height (in)	65	65
Weight (lb)	130	150

Table 2: Model Attributes by Pant Size Worn

	Model Size based on Pant Size Worn						
	2	4 (Thin Model)	6	8	10 (Average Size Model)	12	14 (Average American Woman)
Model BMI	20.9	21.6	20.8	23.3	25	24.2	28.3
Height (in)	60	65	68.75	69	65	70	64
Weight (lb)	107	130	140	158	150	169	165

Figure 7: Mean Attractiveness & Sex Appeal Scores



These results are consistent with past research. The model that wore a size 14, representing the size of the average American woman, received the lowest scores for physical attractiveness and sex appeal, and nearly the lowest scores for social attractiveness. The thin model in the experiment is represented by the model who wore a size 4; this model received high scores on physical and social attractiveness and average scores on sex appeal. The model wearing a size 10 represents the average size model used in the experiment. This model received low scores on sex appeal, physical attractiveness, and social attractiveness. A critical question remained, however, as to whether thin models have greater associations with purchase intent and brand image.

Process

The experiment was carried out in two steps. In the first step an online questionnaire was used and in the second step a paper questionnaire was used. The questions covered in the online questionnaire included demographic details such as: age, internet usage, online shopping familiarity and usage, and familiarity with American sizing of jeans. Consumer

characteristics were also gathered through the questionnaire, these include: fashion innovativeness, technology innovativeness, consumer body image, and consumer fashion experience. And finally both surveys included questions about perceptions: brand image, fit perception, quality perception, likelihood to return, and purchase intention. The questions covered in the paper survey included fit satisfaction, brand perception, quality perception, intent to return, and purchase intention.

In the first part of the experiment participants were asked to imagine that they were buying a pair of jeans online and that they had already found the style and color of jeans that they wanted and that they simple had to choose their appropriate size to make the purchase. They were instructed to only consider fit when making their size decision. In each trial a web interface was randomly selected as the mock website that the participant used to make the size decision. After they made their size decision, participants answered the online survey.

The second part of the experiment occurred immediately after the first part. In the second part participants moved to another meeting room where they were given the exact jeans that were visualized in the first part of the experiment in the size that they selected. The participant was then asked to try on the jeans and answer the questions on the paper survey. In both parts of the experiment the brand of the jeans was not identified. In addition, the second part of the experiment followed the same procedures no matter what interface the participant used in the first part of the experiment.

INDEPENDENT VARIABLES AND MODEL

Product Visualization

There were four different experimental conditions used in this study. Each condition utilized a different mock web site with a different method of visualizing the clothing. The first condition utilized a thin model to present the jeans. This condition was used to represent the typical model that would be used on an average online apparel site. The second condition utilized an average size model that represented the size and body type of the average woman for this age group. Thus, the woman in this condition wore a size 10, rather than a size 14, as this is more representative of the age group participating in this experiment. The third condition utilized no model, but utilized images of the jeans lying flat. This condition, however, provided measurements that would be provided on a typical "size guide". The measurements provided included waist size, hip size, and inseam in inches. The fourth condition utilized a different model for every size of jeans available, there were seven models used to present sizes 2 to 14. The models used in the first and second conditions were also used in the fourth condition. All conditions utilizing models included model height and size worn by the model. This information was presented only to provide a sense of scale that was not well represented through the images alone. Each subject was only presented with one of the above interfaces and was not aware of the other interfaces available. The condition provided was randomly selected. Each mock web site only had one page with no navigational buttons. This was done to prevent factors of web navigation from affecting the results.

Body Image

A measure of Self Concept that focused on the participant's level of perceived self was measured. This measure captured a participant's perception of personal physical attractiveness, or Body Image. The study measured body image with the

Appearance Evaluation subscale from the Multidimensional Body Self-Relations Questionnaire (Brown, Cash, & Mikulka, 1990). Body Image was measured based on the participant's perception of the sexual appeal of their own body, their personal satisfaction with their looks, their body, the way clothing fits their body, and their belief that other find them attractive. The scale uses a seven-point Likert-type scale ranging from rated from strongly disagree to strongly agree. Items were reverse coded where needed. The responses to each of the questions was summed, higher scores on the scale reflect more positive feelings toward body and appearance. A median split was used to divide the participants into a low body image group and a high body image group (Median = 24).

Consumer Fashion Expertise

A consumer expertise scale that was developed by Kleiser and Manttel (1994) and Alba and Hutchinson (1987) was adapted for this study. This scale was used in this study because it has been tested across many different product categories and has proved to be a successful measure of consumer experience. The consumer expertise scale developed by these researchers has four dimensions. A total of 15 questions are used to create the four dimensions. All items were scored on a 7-point Likert-type scale rated from strongly disagree to strongly agree. Only three of the four dimensions were used in this experiment, and the questions were adapted to measure fashion and apparel expertise. These dimensions include (i) cognitive effort and its inherent automaticity, which refers to decision making that is performed with minimal effort and without conscious control (ii) analysis, which represents the extent to which consumers access all relevant/important information for a particular task; and (iii) elaboration, which represents the number of intervening facts that must be computed in order for an inference to be made (Kleiser & Mantel, 1994). The last dimension of consumer expertise, memory, was eliminated from this experiment. Memory measures a consumer's ability to remember product-related information defined by past experience

with the brand. The brand of the jeans used in this experiment remained confidential, thus eliminating any previous recall that consumers would have with the product.

In this experiment cognitive effort was measured based on the participant's ability to detect an article of clothing's brand, their level of brand loyalty and their knowledge of which brand to buy. Analysis was based on the participants' knowledge and propensity to learn about clothing and the latest fashion styles. An elaboration measure was developed by measuring the participant's level of fashion knowledge and their ability to use their knowledge to assist in their decision making of fit. Please see Appendix A for a description of the questions used to measure each of the dimensions.

To analyze the data the responses to each set of questions were summed by dimension. There was low correlation between cognitive effort and analysis and cognitive effort and elaboration at only .307 and .325 respectively. However, there was a high correlation between analysis and elaboration at .763. A median split was used to divide the responses into a high expertise and a low expertise group across each dimension (Cognitive Effort Median = 13, Analysis Median = 15, Elaboration Median = 15).

DEPENDENT VARIABLES

Perceived Fit Satisfaction

The measure of perceived fit satisfaction includes measures of overall satisfaction of fit, satisfaction of length of jeans, satisfaction with fit at the waist, hips, thighs, and lower hips. Additionally, the measure includes satisfaction with comfort, overall tightness, and how satisfied the participant is with how the jeans fit her body type. A total of 10 questions were used. All items were scored on a 7-point Likert-type scale from completely dissatisfied to completely satisfied. The only measurement that was

negatively correlated with the others was satisfaction of the length of jeans. Most female consumers have become accustomed to having jeans hemmed and realize that jean length is only offered in one or two other variations, and thus length is not an indicator of fit satisfaction. Measurements of fit satisfaction were only taken in the second part of the study once the participant saw and wore the jeans. This measure was used as measure of consumer accuracy of clothing size estimates.

Objective Fit Satisfaction - Manufacturer

Two different measurements were used to gain an objective measurement of fit and consumer accuracy of clothing size estimates. The first measurement used was the size guide information provided by the manufacturer for the jeans. The size guide information included waist, lower hip, and inseam measurements. These measurements were compared to the participant's body measurements to create a continuous variable that defined the level of satisfactory fit, thus a lower number indicates a more satisfactory fit.

Objective Fit Satisfaction – Jean Measurements

The second set of measurements used were actual measurements of the jeans' waist, hip, lower-hip, inseam, and out-seam. The measurements were used to find the difference between the measurements jeans and the measurements of the participant's body. This provided a continuous variable that indicated a level of satisfactory fit, and again a lower number indicates a more satisfactory fit.

Likelihood to return

A variable that measures the participants' decision to return the jeans in the size purchased was measured in both parts of the study. In the first part of the study, participants were asked how likely they would be to return the jeans based on their

perceptions of their online shopping experience. In the second part of the experiment participants were able to try on the jeans, and then make a judgment of their likelihood to return the jeans chosen. Both questions used a 7- point Likert-type scale rated from extremely unlikely to extremely likely. As expected, there was a strong negative correlation between likelihood to return as measured in the second part of the experiment and perceived fit satisfaction at -.709. This measure was also used to measure consumer accuracy of clothing size estimates.

Purchase Intent

The participant's desire to purchase the jeans outside of the experimental setting was measured. Two questions were measured using a 7- point likert scale rated from extremely likely to extremely unlikely. The first question asked the subjects to rate the likelihood that they would buy the pair of jeans shown in the experiment if they saw them in a non-research setting, in a store or online. The second question asked the subjects to rate the likelihood that they would actively seek out the jeans shown in the experiment and purchase them. Purchase Intent was measured in the first part of the experiment immediately after the participant was asked to make the online size decision. Purchase Intent was measured again in the second part of the experiment immediately after the participant was able to try on the jeans purchased.

Brand Perception

Perceptions of Brand Image were also measured in both parts of the study. Brand perception was measured using the same two questions, with slight variations, in both questionnaires. The first question asked the subjects agreement with the following statement: The brand of jeans that you just purchased is a leader in the clothing industry for jeans. The second question asked subjects to rate their perception of the popularity of

the brand. Both questions used a 7- point Likert-type scale rated from strongly agree to strongly disagree.

Quality Perception

A measure of product quality was taken in both parts of the study. In the first part of the study the construct of quality was measured by perceived quality as opposed to objective quality. Perceived quality captures the consumer's judgment of the intrinsic qualities of the product based on their judgments of the information presented on the mock website and the visual representation of the jeans. In the second part of the study the construct of quality perception was measured using two dimensions: quality perception and quality satisfaction. In this part of the experiment the measure of perceived quality captures the degree and discrepancy between a consumer's perceptions and expectations as the participant now that they had the opportunity to touch, feel, and wear the jeans. In both parts of the study the same question for perceived quality, with a slight variation, was used to create a measurement of product quality perception. The question asked the participant to indicate their perception of the quality of jeans on a seven point scale ranging from very poor quality to excellent quality. The second dimension of quality satisfaction was used to measure the subjects' satisfaction with the quality of the jeans now that they had the opportunity to touch and feel the jeans and gain a deeper understanding of the intrinsic qualities of the jeans. All questions used a 7- point Likert-type scale.

RESULTS & DISCUSSION

MULTIVARIATE ANALYSIS

Data was entered into a 6x3 between subjects multivariate analysis of variance. The product visualization method, consumer experience and body image were used as the

independent variables. A measure of perceived fit satisfaction, two measures of objective fit, likelihood to return, brand perception, and quality perception were used as the dependent variables. No significant overall multivariate (MANOVA) main effects were found. A significant multivariate interaction between the product visualization method and body image was found ($F = 3.338$, $p = .005$). In addition, a significant multivariate interaction between the product visualization method, body image, and consumer experience cognitive effort was found ($F = 2.1.836$, $p = .043$). The multivariate effects were analyzed further via univariate analyses of variance.

UNIVARIATE ANALYSES

Product Visualization

Means for the dependent measures are presented in the table below. All dependent measures were analyzed using an ANOVA analysis, using the product visualization method as the independent variable. However, no dependent variable showed a significant main effect across the different cases. Thus, H1, H2, H3, H4, H5 were not supported. The product visualization method had no significant effect on the participant's ability to make accurate clothing size estimates, their purchase intentions, or their perceptions of the brand. It was also found that the product visualization method had no significant effect on the participant's perception of quality which is in agreement with the interviewee's beliefs that participants focus on the intrinsic qualities of the jeans to make quality estimates and that the visualization method used should have no effect on this decision.

Table 3: Online Clothing Visualizations & Fit Satisfaction, Purchase Intent, & Brand & Quality Perception

	Online Purchase (Part 1)				Post Purchase Try-On (Part 2)			
Dependent Variable	Thin Model (Case 1)	Average Model (Case 2)	No Model (Case 3)	All Models (Case 4)	Thin Model (Case 1)	Average Model (Case 2)	No Model (Case 3)	All Models (Case 4)
Perceived Fit Satisfaction (F=.89, p =.45)					44.074	48.826	48.619	43.565
Objective Fit Manufacturer Measurements (F=.242, p =.867)					13.653	12.587	12.855	12.169
Objective Fit Jean Measurements (F=.952, p =.419)					8.319	8.016	8.875	7.451
Likelihood to Return (F=1.076, p =.363)	3.815	3.435	3.800	3.636	4.444	3.783	3.762	4.609
Purchase Intent (F=.989, p =.402)	6.333	7.087	7.450	7.182	6.741	7.652	7.524	6.522
Brand Perception (F=.513, p =.674)	8.000	8.000	8.650	8.682	8.852	8.348	9.143	8.783
Quality Perception (F=.190, p =.903)	4.852	4.957	4.750	4.955	5.2595	5.1955	5.0475	5.0435

Body Image

Using an ANOVA to analyze the data a significant interaction effect between body image and product visualization method on purchase intent was found (F = 3.408, p = .021). Cell comparisons revealed that subjects with low body image perceptions reported highest intentions to purchase when exposed to the clothing product presented on an

average sized model versus any other product visualization. Whereas subjects with high body image perceptions reported highest intentions to purchase when exposed to the clothing product presented on a thin model versus any other product visualization. When analyzing the data for significant main effects, Hypothesis 4 was not supported. Hypothesis 4 states that purchase intention will be higher when consumers are presented with a thin model versus an average or larger sized model. Although, there was no main effect of model type on purchase intentions, there was a significant interaction between model type and body image. Participants with higher perceptions of body image do in fact report higher intentions to purchase when exposed to the clothing presented on a thin model. These findings could indicate that body image is not only a factor of fit satisfaction, but is also an indicator of purchase intentions.

Table 4: Means for Body Image by Product Visualization on Purchase Intent

	Body Image							
Dependent Variable	Low (10-24)				High (25-35)			
	Product Visualization Method							
	Thin Model (Case 1)	Average Model (Case 2)	No Model (Case 3)	All Models (Case 4)	Thin Model (Case 1)	Average Model (Case 2)	No Model (Case 3)	All Models (Case 4)
Purchase Intent (F = 3.408, p = .021)	6.46	8.9	8.77	6.42	7	6.69	5.11	6.64

** Score highlighted in blue indicates highest reported scores

Using an ANOVA analysis there were significant main effects for body image on objective fit satisfaction measured by manufacturer measurements (F = 7.237, p = .008) and purchase intent (F = 4.02, p = .048). As compared with subjects who had low perceptions of their own body image, subjects who had high perceptions of body image

made more accurate size decisions when using objective fit and the manufactures size guide as the measure (see table for cell means). This findings support Hypothesis 6, that consumers with higher perceptions of body image will make more accurate size estimates. In addition, subjects with high perceptions of their own body image reported significantly lower purchase intentions than subjects with low body image perceptions despite their more accurate decisions. Past research has found that heavier women tend to report more body-focused anxiety, thus having lower perceptions of their body image (Halliwell & Helca Dittmar, 2004). In correlation with this past research finding the low body image group did have a significantly higher body weight and BMI. The correlation between BMI and body image was -.341, the negative relationship indicates that participants with a lower BMI had more favorable perceptions of their body image. Finally, the participant group for this experiment had an average weight of 132.8 pounds, when the average US females weight is over 30 pounds heavier at 162.9. It is possible that these findings are specific to young thin females (i.e. body image might influence self-reports of fit satisfaction in groups of older, or heavier, woman). The subjects used in this experiment may not be indicative of the general female population, and as a whole their perceptions of their own body image may still remain lower than the general female population.

Table 5: Means for Body Image on the Dependent Variables

	Body Image	
Variable	Low (10-24)	High (25-35)
Objective Fit Manufacturer Measurements (F = 7.237, *p* = .008)	9.667	6.63
Purchase Intent (F = 4.02, *p* = .048)	7.583	6.468
Weight (F = 4.99, *p* = .028)	137.23	128.24
BMI (F = 5.703, *p* = .019)	22.84	21.46

** Score highlighted in blue indicates highest measured scores

Past research indicated that consumers who are exposed to images of thin models feel worse about their own physical appearance, and thus have lower body image perceptions. When analyzing the data no significant difference between body image based on the product visualization method used was found. Additionally, when using ANOVA analysis to analyze the data for interaction effects, no significant interaction between body image and visualization method on perceived fit, objective fit satisfaction or likelihood to return were found. Thus, Hypothesis 7, which stated that consumers will make more accurate size estimates when consumers are presented with an average or larger size model versus a thin model, was not supported. The lack of significance could be again due to the fact that the subjects used in this experiment represent a younger, thus thinner, age group and as a whole they do not adequately represent the general female population. Body image and exposure to thin images might be more influential on fit satisfaction in groups of older, or heavier, woman.

Consumer Fashion Expertise

Interview findings and the literature review identified that consumer experience could have a great impact on consumer behavior and clothing size decisions. Thus, ANOVA analysis using the three dimensions of consumer experience as independent variables was analyzed.

It was predicted that consumers would make more accurate clothing size decisions and likelihood to return would be lower for consumers with higher levels of experience when they are presented with a thin model versus an average or larger size model. Using an ANOVA analysis there were significant interaction effects for product visualization method and consumer experience analysis on perceived fit satisfaction ($F = 3.969$, $p = .011$). There were no significant effects with the other dimensions of consumer experience and with objective measurements of fit or likelihood to return. Contrary to expectations, cell comparisons revealed that subjects with high levels of consumer experience analysis who were exposed to product visualizations utilizing a thin model did not report higher feelings of fit satisfaction. In fact, subjects with higher levels of consumer experience analysis were most satisfied with their fit decisions when shown the average size model visualization than when shown any other visualization. Participants with low levels of consumer experience analysis were most satisfied with their fit decisions when shown the no model visualization than any other visualization (See Table). Thus, Hypothesis 8 was not supported.

Consumer expertise analysis is measured by the participants' knowledge and propensity to learn about clothing and fashion. Researchers agree that as product familiarity increases decision making and processing shifts from holistic to analytical (Hutchinson & Eisenstein, 2007). Holistic decision making refers to the process of using all salient

information to form an overall judgment or choice among options. Analytical decision making is rule-based and only relevant and diagnostic information is used to make a decision, ignoring all other information that may be irrelevant. This definition of the Analysis dimension of consumer experience can explain why high experience consumers were able to use an interface with an average model to make the most accurate size decision, as this interface may provide the most direct diagnostic information than any of the other choices. While the novice analysis consumers made the best size decisions using the interface with no model. This could be because this interface provided the least amount of salient information, while the other interfaces may have increased the amount of information making it difficult for novices to holistically process all the information provided.

Table 6: Means for Consumer Experience Analysis on the Dependent Variables

	Consumer Experience Analysis							
Dependent Variable	Low (4-15)				High (16-21)			
	Product Visualization Method							
	Thin Model (Case 1)	Average Model (Case 2)	No Model (Case 3)	All Models (Case 4)	Thin Model (Case 1)	Average Model (Case 2)	No Model (Case 3)	All Models (Case 4)
Perceived Fit Satisfaction (F = 3.969, p = .011)	43.57	41.33	50.08	49.33	44.62	53.64	46.25	32.75

** Score highlighted in blue indicates highest measured scores

Additionally, when using an ANOVA analysis to analyze the significance that consumer experience has on consumer behavior and clothing size decisions significant main effects for consumer experience - cognitive effort on perceived fit satisfaction (F = 5.756, p =.018), and consumer experience – analysis (F = 6.172, p =.015) and consumer

experience – elaboration (F = 6.696, p =.011) on objective fit using manufacturer measurements were found. In all cases consumers with higher levels of experience made more satisfactory fit decisions. These results are consistent with results of Klerk and Tselepis (2007), who found that consumer knowledge and expertise of the intrinsic factors of clothing can benefit a consumer in her evaluation of fit. These results suggest that a consumer's level of experience is an important indicator of their ability to make satisfactory size decisions in online shopping environments.

Table 7: Means for Consumer Experience on the Dependent Variables

	Consumer Experience – Cognitive Effort	
Variable	**Low**	**High**
Perceived Fit Satisfaction (F = 5.756, p = .018)	44.68	47.84
	Consumer Experience – Elaboration	
Objective Fit Manufacturer Measurements (F = 6.696, p = .011)	8.78	7.27
	Consumer Experience – Analysis	
Objective Fit Manufacturer Measurements (F = 6.172, p = .015)	9.17	6.85

** Score highlighted in blue indicates highest measured scores

CHAPTER V

CONTENT ANALYSIS

PURPOSE

The growth in online clothing sales and the consistent developments in technology and website capabilities present the opportunity for online retailers to engage consumers and communicate clothing information using a variety of methods. While the potential is evident, it is still unclear which methods provide the best results. A content analysis of popular online retail channels was conducted to gain a better understanding of the online tools that affect consumer fit decisions. To help understand the different strategies adopted by retail Web sites, this research study analyzes the different methods of online product representation and its impact on sales and consumer satisfaction. This analysis tests hypotheses one, two, and four by using real websites and their product visualization method as the independent variable and consumer satisfaction and sales as the dependent measures. Consumer satisfaction includes a dimension of whether post-purchase needs have been met, which is closely related to attitudes to the item and the brand, and largely determines repurchase intentions (Oliver, 1993). Consumer Satisfaction also includes a dimension of satisfaction with the purchase process, which indicates the extent to which a consumer perceives that a retailer has met his or her needs throughout the purchase process, from the need recognition phase though to the receipt of goods, and so influences attitudes towards the store rather than the item (Zeithaml, et al., 1996). Satisfactory fit decisions and return rates have an impact on consumer satisfaction and sales. This study was also conducted as a method of grounding the results from the experiment in real-world examples.

METHOD & PROCEDURE

The sample consisted of the top 52 apparel e-retailers taken from North America's 500 largest e-retailers based on 2009 annual web sales. Internet Retailers Top 500 Guide, 2010 Edition, was used to select the 52 retailers. The companies selected for this study can be further categorized by the goods they sell. Of the 52 e-retailers, 12 sold clothing and other products, while the rest only sold clothing and clothing accessories.

MEASUREMENTS & METRICS

A coding sheet was developed to analyze the website used in the content analysis. The components utilized in the coding sheet can be organized into the following categories: product visualization methods, model characteristics, sizing information, detail information, consumer generated information, interactive features, site characteristics, operations, shopper profile, consumer satisfaction, and purchase intent. The information was gathered by analyzing the websites pages where jeans were sold, thus the information applies to the website's method of visualizing jeans on their site. Additionally, data from the Internet Retailers Top 500 Guide, 2010 Edition, was used to gather more specific research data like online consumer satisfaction ratings.

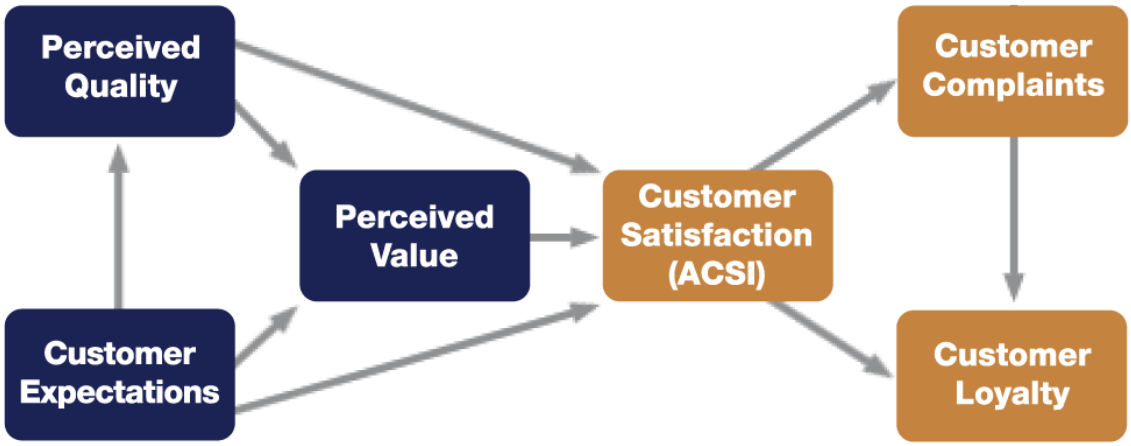
Product visualization methods include the format that the clothing was presented. There were 4 categories of product visualization: no model used and clothing laying flat, human model, mannequin, a computer animated model, or a combination of any of the above visualizations. Model Characteristics includes the body size of the model (thin, average, or plus size), if the models face was included in the image, and if the model's body dimensions were provided. Sizing information involved the use of size guide, the number of sizes available, the choices in length, and the lowest to highest size available. Detail Information included fabric description, style description, and care instructions.

Consumer generated information included an overall rating, consumer ratings of fit, consumer opinions, and the use of a facebook “like” feature. Interactive features included the ability to zoom images, to see larger images, the types of images displayed (interactive or static), and to share clothing item with friends through the use of email and social networking tools. Site characteristics included the gender for which products were sold, the age group for which products were sold (adults, children, teens), and the return policy. Data for visual information methods, model characteristics, detail information, consumer generated information, interactive features, and site characteristics were all gathered by analyzing the retailers’ website.

Data was also gathered to understand operations and the shopper profile. Operations included web sales, monthly visits, monthly unique visits, conversion rate, average ticket, year site was launched. Web sales, conversion rate, and average ticket information were provided by Internet Retailer. Monthly visits and unique visits were estimated by Internet Retailer based on average daily visits as reported by comScore Inc. The shopper profile included the age groups that purchased from the site, the percentage of female consumer, and the median household income. The shopper profile data is based on 2009 average per month data calculated by Compete Inc. Demographic data was measured using a normalization methodology, leveraging multidimensional scaling to ensure metrics are representative of the US Internet population. Purchas Intent was measure by ForSee Research by calculating visitor’s likelihood to purchase online or offline. Online consumer satisfaction ratings were calculated through the use of the ACSI methodology by ForSee Research. The ACSI is an economic indicator and a cross-industry benchmark of customer satisfaction. The American Customer Satisfaction Index uses customer interviews as input to a multi-equation econometric model developed at the University of Michigan's Ross School of Business. The ACSI model measures drivers of satisfaction, customer expectations, perceived quality, and perceived value, to gain consumer

satisfaction ratings. The ACSI methodology measures current satisfaction and predicts how improvements in online customer satisfaction will foster future behaviors tied to loyalty and purchase (www.theacsi.org).

Figure 8: ACSI Methodology



INDEPENDENT VARIABLES

The independent variables used in this analysis were product visualization method and model size. Of the 52 sites that were examined only 1 used a mannequin for all jean visualizations, 4 used no model at all, and 47 used a human model. Some websites used a combination of methods to visualize clothing, but the visualization method most commonly used to present jeans was the one recorded. When analyzing the models size that was used to present the clothing on the 48 remaining sites, 8 sites used an average or larger sized model, and the remaining 42 used a thin model. Additionally, only 13 sites showed the models face in the image.

DEPENDENT VARIABLES

To analyze the hypotheses stated above the dependent variables used were consumer satisfaction, purchase intent, and web sales. Both web sales and consumer satisfaction were used as measures to indicate more favorable consumer size decisions. Consumer satisfaction measures the consumer's general attitude toward the e-retailing service provider after the transaction is complete (Jiang & Rosenbloom, 2004) Thus, the satisfaction index captures the consumers unhappiness with their purchase if the size and item they have chosen is not what they expected. A score that indicated the change in consumer satisfaction from 2009 to 2010 was also used. Of the 52 sites only 22 sites had scores for consumer satisfaction and purchase intent. Web sales were also used as an indicator of satisfactory fit decisions. Even though web sales do not capture the loss incurred by returns, they do capture the e-retailers ability to gain repeat purchasers. Repeat purchases are an indication of consumers who are satisfied with their previous purchase decisions. The web sales were broken down into 4 categories using a median split: less than $40,963,000, $40,963,000 thru $104,500,000, $104,500,000 thru $409,190,000, and more than $409,190,000. This was done to control for the dramatic difference in sales for large companies, like Amazon, and small boutiques like Eileen Fisher.

Table 8: Content Analysis Dependent & Independent Variable

Online Retailer	Visualization Method □ No Model ■ Human ◆ Mannequin	Model Body Size ❍ No Model ⊙ Thin Model ● Average & Larger	Model Face Included	Return Policy (Days)	2009 Web Sales ($ in thousands)	2009 Web Sales Growth Rate	Satisfaction	Change in Satisfaction from 2009 to 2010	Purchase Intent
Amazon.com	■	●		30	24510000	27.86	86	2	92
Walmart.com	■	●		90	3500000	19.76	80	3	89
J.C. Penney Co. Inc	■	●		90	1500000	0	80	3	88
Victoria's Secret	■	⊙	●	90	1445000	8.4	79	1	86
Macy's Inc.	■	●		Endless	1243840	19.6	75	4	84
Target Corp.	■	●		90	1209208.32	0	78	3	88
Gap Inc. Direct	■	⊙		45	1120000	8.74	77	5	82
L.L. Bean Inc.	■	●		Endless	1064497.5	2	82	4	86
Overstock.com Inc.	■	⊙		30	876769	5.65	77	7	81
Nordstrom Inc.	■	⊙		30	784100	14.27	78	4	84
NeimanMarcus.com	■	⊙	●	180	496000	-12.13	78	8	79
Kohl's Corp.	□	❍		Endless	491500	38.06	80	4	89
Saks Direct	■	⊙	●	Endless	430023.866	13	77	4	79
J. Crew Group Inc	■	⊙		60	346680	2.51	75	6	76
American Eagle	■	⊙		Endless	344300	12.15	78	6	83
Urban Outfitters	■	⊙	●	30	323680	18.79	74	7	77
Abercrombie &	□	❍		60	249400	-7.97	79	9	81
Ralph Lauren	■	⊙	●	60	200000	11.11	79	7	83
Coldwater Creek	■	⊙		Endless	198077.74	-6	80	5	82
Net-a-Porter LLC	■	⊙		14	182850.624	15			
Eddie Bauer	■	⊙	●	14	181000	-5.7	77	5	81
YOOX Group	■	⊙		20	169508.482	44.43	71		69
RueLaLa.com	■	⊙	●	30	157000	96.25	73		72
The Talbots Inc.	■	⊙	●	90	148154	3.77			
Aeropostale Inc.	■	⊙		Endless	129000	48.11			
Ann Taylor Stores	■	⊙		60	112000	-20			
Gilt Groupe	■	⊙	●	21	97000	66.67			
Boston Proper Inc	■	⊙	●	Endless	95700	9.99			
Express LLC	■	⊙		90	95000	238.0			
dELIA's Inc	■	⊙	●	60	86959	4.08			
Bluefly Inc	◆	⊙		60	81222	-15.22			
Chico's FAS Inc	■	⊙		90	61524.736	39			
HauteLook	■	⊙		21	61500	50.15			
Karmaloop LLC	■	⊙		14	60000	50			
Hot Topic Inc	■	⊙		45	59390.287	29.82			
The Buckle Inc	□	❍		60	52300	45.28			
Pacific Sunwear	■	⊙		60	51300	16.33			
Fossil Inc	■	⊙		90	50250	9.96			
Barneys New York	■	⊙		30	45000	30.21			
New York & Co Inc	■	⊙		60	39617	-12.18			
Guess? Inc	■	⊙	●	30	38184.089	-3			
A/X Armani	■	⊙		30	36100.238	-3			
Patagonia Inc	■	⊙		Endless	28938.773	5			
Bebe tores Inc	■	⊙		21	26150	-10.81			
Levi Strauss & Co	■	●		60	24500	20.81			
The Wet Seal Inc.	■	●		21	24062	10.53			
Charlotte Russe	■	⊙		30	20400	85.45			
Kenneth Cole	■	⊙		30	17300	-8.69			
Forever 21	■	⊙	●	30	15364.627	2			
The Timberland Co	□	❍		60	15000	15.38			
Burberry Ltd	■	⊙		30	14300	5.93			
Eileen Fisher Inc	■	⊙		30	14000	28.44			

** Rows highlighted in gray indicate retailers that sell other products in addition to clothing and clothing related products.

RESULTS

UNIVARIATE ANALYSES

Product Visualization

It was predicted that presenting clothing online on a human model will allow consumers to make more accurate clothing size decisions. The experimental results did not prove this hypothesis. For this analysis to measure accuracy of consumer decisions consumer satisfaction, web sales, and purchase intent were used as dependent variables. When using and ANOVA to analyze the data no significant main effects were found. Thus, once again the results do not support H1.

Model Size

Based on interview results and literature review it was also predicted that consumers will make more accurate clothing size decisions and likelihood to return will be lower when clothing is presented on an average versus a thin sized model. Using and ANOVA analysis there was a marginally significant main effect for the model size on consumer satisfaction ($F = 2.773$, $p = .091$). However, a main effect for model size on the change in consumer satisfaction from 2009 to 2010 was found ($F = 4.12$, $p = .035$). Additionally, a marginally significant main effect for web sales ($F = 2.55$, $p = .108$) was found. In all cases, except for the change in consumer satisfaction, more positive scores were found for websites that utilized average or larger sized models versus no model or thin models (See Table). Change in consumer satisfaction shows that websites that use no model have the most significant increases in consumer satisfaction. It is hard to predict why this may be the case as there are many outside factors that could be the cause for the increase in consumer satisfaction for these sites. These findings are in support of Hypothesis 2, that presenting clothing online on a human model with an average versus a thin body size will allow consumers to make more accurate clothing size decisions.

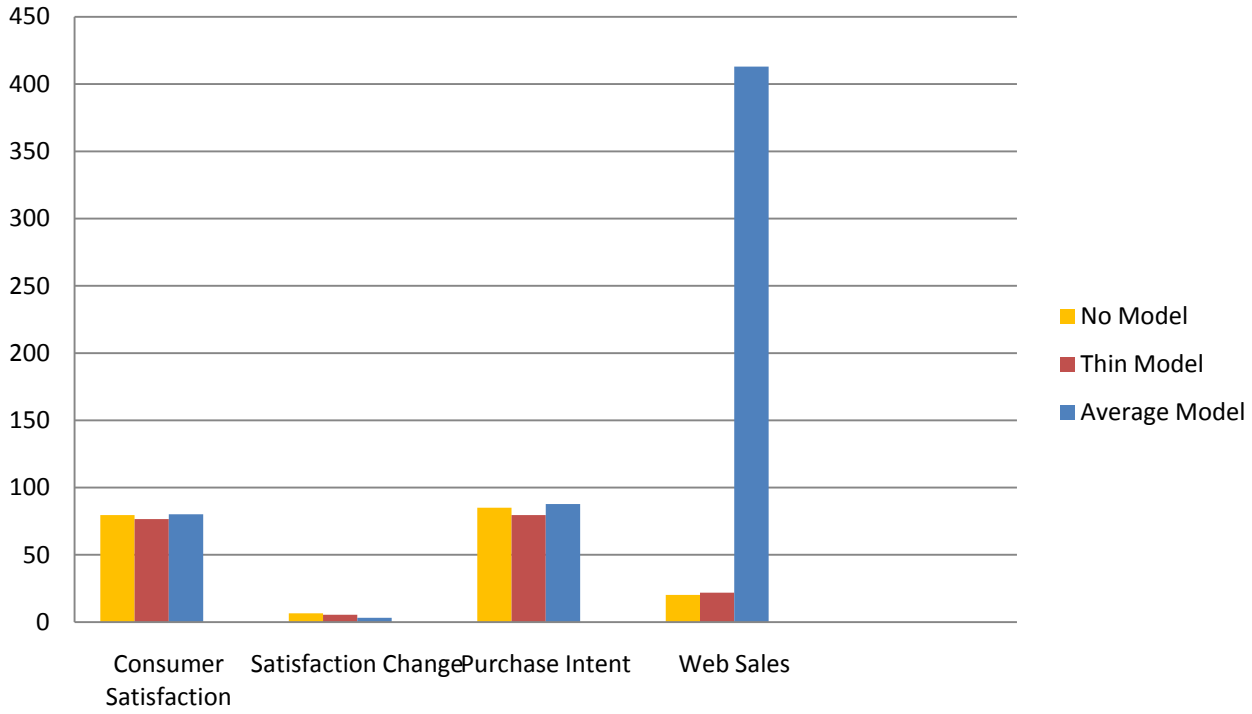
Significant main effects for model size on purchase intent (F = 9.85, p = .001) were also found when an ANOVA analysis was used. It was predicted that purchase intention would be higher when consumers were presented with a thin model versus an average or larger sized model. However, these findings indicate opposite results in that consumers who were exposed to average or larger size models were found to have the highest scores for purchase intent (See Table). In fact, consumers who were exposed to thin models indicated the lowest scores for purchase intent. Thus, these findings do not support Hypothesis 4, that presenting clothing online on a human model with a thin versus an average or larger body size will lead to higher consumer purchase intentions.

Table 9: Means for Model Size on the Dependent Variables

	Model Size		
Variable	Thin Model	Average or Larger Size Model	No Model
Consumer Satisfaction (2.773, p = .091)	76.6	80.2	79.5
Consumer Satisfaction Change from 2009 to 2010 (F = 4.12, p = .035)	5.4	3.2	6.5
Purchase Intent (F = 9.85, p = .001)	79.6	87.8	85
Web Sales (F = 2.55, p = .108)	$218,480,000	$4,134,500,000	$202,050,000

** Score highlighted in blue indicates highest measured scores

Figure 9: Means for Model Size on the Dependent Variables



These findings indicate that consumers make more accurate size decisions and report higher purchase intentions when clothing is presented on an average or larger size model. A strong relationship between consumer satisfaction and purchase intent is logical and correlates with past research findings. It was also predicted that the use of average or larger sized model would lead to higher consumer satisfaction as more consumers would be able to make more satisfactory size estimates. This prediction was made based on past research and retailer interviews. Although retailers agree that consumers will be able to make more accurate size estimates with the average or larger size models, they also believe that the benefits will be outweighed by the negative effects on brand perceptions. Thus, most retailers refuse to change the size of the model used and continue to use thin

models in online product visualizations. In this content analysis on 15% of online retailers utilized an average or larger size model. This content analysis was not able to measure brand perceptions, however, if web sales is an indicator of brand perceptions, than the results do support retailer beliefs. These results indicate that the use of average or larger size models can have many positive benefits, with no few negative implications.

CHAPTER VI

CONCLUSION

DISCUSSION

This research focused on improving consumer's abilities to make accurate size decisions, thus reducing return and increasing purchasing intent. Based on the results from interviews and literature review it was predicted that visualizing clothing products on average sized women would have positive effects on consumer clothing size decisions.

When analyzing the summation of the results from the experiment and the content analysis it is clear that our predictions that average or larger size models used in clothing visualizations do indeed improve most consumers' abilities to make accurate size decisions. Consumers with high levels of consumer experience analysis was the only group that was found to have more accurate size decisions when exposed to visualizations utilizing thin models. Please see the below table for a summation of results from the two studies in regard to consumer's abilities to make accurate size decisions.

Table 10: Model Size Summary of Results on Consumer Satisfaction

	Model Size		
Variable	Thin Model	Average or Larger Model	No Model
	Experimental Results		
Low Consumer Experience Analysis & **Perceived Fit Satisfaction** (F = 3.969, *p* = .011)	43.57	41.33	50.08
High Consumer Experience Analysis & **Perceived Fit Satisfaction** (F = 3.969, *p* = .011)	44.62	53.64	46.25
	Content Analysis		
Consumer Satisfaction (2.773, *p* = .091)	76.6	80.2	79.5
Consumer Satisfaction Change from 2009 to 2010 (F = 4.12, *p* = .035)	5.4	3.2	6.5
Web Sales (F = 2.55, *p* = .108)	$218,480,000	$4,134,500,000	$202,050,000

** Score highlighted in blue indicates highest measured scores

While it was found that the use of an average size model can have many positive effects on online shopping environments, on the contrary it was also predicted that the use of average sized women to visualize clothing may have an adverse effect on purchase intent and brand perception. This prediction came from strongly held opinions of clothing retailers and the fashion industry as a whole. There has been extensive criticism on the use of thin models in advertising and visual communication because of the negative image that it is perpetuating. However, the fashion industry is very reluctant to change its approach. The argument against larger models is that "thinness" sells, whereas "fatness" does not. A spokesperson for the agency representing top fashion models like

Naomi Campbell and Claudia Schiffer strongly confirms that “Statistics have repeatedly shown that if you stick a beautiful skinny girl on the cover of a magazine you sell more copies... At the end of the day, it is a business and the fact is that these models sell the products" (Gillian 2000, p. 7).

However, the results of the experiment and the content analysis when taken together suggest that most subjects are more likely to purchase when exposed to clothing visualizations on average sized models. Once again, there was one group that had reported higher purchase intentions when shown clothing visualizations on thin models. Please see the below table for a summation of results from the two studies in regard to purchase intentions.

Table 11: Model Size Summary of Results on Purchase Intent

	Model Size		
Variable	Thin Model	Average or Larger Model	No Model
	Experimental Results		
Low Body Image & **Purchase Intent** (F = 3.408, *p* = .021)	6.46	8.9	8.77
High Body Image & **Purchase Intent** (F = 3.408, *p* = .021)	7	6.69	5.11
	Content Analysis		
Purchase Intent (F = 9.85, *p* = .001)	79.6	87.8	85

** Score highlighted in blue indicates highest measured scores

The results indicate that use of thin model to present clothing on an online clothing site, which is the most common method of clothing visualizations on online websites today, could have a negative impact on sales and returns. The findings indicate that an average

model could have the greatest impact on increasing sales and reducing returns, thus significantly increasing profits.

Subjects used in this experiment had an average weight of 132.8 pounds, when the average US female weighs 162.9 pounds and wears a size 10. The median size chosen by participants was only a size 6. To mitigate for this difference the model depicted in the product visualizations of the average size model wore a size ten and weighed 150 pounds. However, this is still larger than the average subject whom participated in this experiment. The fact that the participants in this study are smaller than the average female and are on average smaller than the model used in the average product visualizations make the findings even more interesting than expected. It was assumed that the use of an average sized model would improve decision making because more women would be more similar to the model used in the visualizations. However, the smaller than average body size of the participants in this experiment indicate that this belief is most likely not the reason for the positive benefits that have been found when an average size model is used in online clothing visualizations. Thus, these results indicate that there may be other factors that are in play. Other factors may include self-esteem, social comparison, or other attitudes or elements of self concept. Additionally, the subjects used in this experiment all attend Georgia Institute of Technology, and there may be similar personal characteristics among this group that are not indicative of the general online shopping female population.

MANAGERIAL IMPLICATIONS

Although most retailers believe that larger sized models have the potential of negatively impacting their brands and their business, results show quite the contrary. The combined results from the content analysis and the experiment indicate that the use of an average

sized model could significantly increase profits by decreasing returns and increasing sales. To gain these benefits it is important for retailers to gain a strong understanding of the expertise and body image concerns of their consumers. Additionally, they should spend more resources on gaining more expert consumers. They can do so by assisting in the development of consumers from novices to experts. By increasing their brand recognition and the online shopping frequency of consumers they can have a positive impact by increasing their consumer's familiarity with their products and increasing the consumer's ability to recognize and classify information on their website.

The results clearly indicate that not all consumers are the same. Thus, the more understanding that retailers have of their consumers the more equipped they will be to take on the challenges of the online retail environment. The online medium provides many benefits and one key benefit is the retailer's ability to seamlessly track individual consumer information. Online retailers should utilize this ability to improve their understanding of personal characteristics and attitudes that make up their target market and that can have a significant effect on consumer decision making and purchasing behavior. With this information they also have the ability to easily provide personalized interfaces to each consumer. This technique is one that is being used frequently today. Thus, retailers have the ability to understand the level of consumer experience and body image perceptions of their consumers and then use this understanding to individually personalize the model size used in clothing visualizations. This would allow retailers to gain significant decreases in returns and significant increases in purchases, thus gaining even more significant increases in bottom line profits.

Finally, it is clear that the online shopping environment is a highly competitive industry with many factors that remain unknown and ambiguous. Thus, online retailers have a strong emphasis on the use of experiments to gain an understanding of the potential benefit of new online visualization methods and functionality. However, before a retailer

will devote resources to a new method of visualization they must ensure that the return on their investment is satisfactory. In an interview one retailer who worked as an e-commerce site developer stated that:

> *We never take on a project without having an estimated ROI for up to 5 years. We don't want to do something unless we can account for it because everything requires resources. We usually do an A-B test. If we are trying out something new a percentage of consumers will see the old functionality when they go to our site and the remaining consumers will see the new functionality. Based on how they perform or purchase behavior we can see the benefit of the new functionality, allowing us to estimate the ROI.*

When retailers analyze experimental results purchase behavior is one of the strongest indicators of a successful new feature. Return rates, however, are not analyzed as part of the experimental research. In fact, most experts who work on online retail sites only focus on the online site and other individuals, not on the team, focus on fulfillment which includes return rates. Returns are only factored in the decision when ROI is analyzed and a standard return rate is utilized in profit calculations. Online retailer's lack of focus on return rates can be detrimental to experimental results and the potential improvements that can be gained. In particular, it is important for retailers to more carefully consider the visual representation and the size of the model used to present clothing on their site and the effect that clothing visualizations can have on return rates.

LIMITATIONS & FUTURE RESEARCH

This study has identified many interesting discoveries; however, there still remain some limitations to the research. First, the research model is not designed to include all

possible influences on consumer decision making in online purchases and in return decisions. The scope of the research is limited to the identified variables because the focus of the research is more specifically on online clothing visualization. However, there are many other factors that affect consumers' size decisions and return decisions.

One of these factors include the addition of friends, family and experts in the decision making process. During the qualitative research it was discovered that consumers utilize other opinions as a source of information in assessing apparel fit. Experts indicated that often consumers would return items because their friends or spouses did not like how the article of clothing looked on the consumer. One expert indicated that sales associates would try on new articles of clothing in the store and then assist consumers by indicating what body types the clothing fit best. Additionally, another expert indicated that one online retail channel utilized information gained from returns to provide more specific information about fit on the website. This expert believed that this information was helpful to future consumers. There has been extensive research on the impact of consumer ratings on purchase decisions in online shopping environments; however, there has been minimal research on the impact of consumer ratings on fit decisions and return rates.

There were also limitations in the data used in the content analysis as well. The dependent variables, of consumer satisfaction and web sales, used as indicators of fit satisfaction were not the ideal source of data. It would have been preferable to have return rate data from online retailers; however this data was not available.

The sample of participants for this research was young college students with an average age of 20. This age group has lower BMI scores due to lower body weights than the average female population. Thus, this group is not indicative of the average female

population and more participants in this study have body types that are more similar to the thin model. The median age group of shoppers on the top clothing online sites indicated by the content analysis was 25-34. The age group utilized for the experiment was 18-24, thus the subjects who participated in the experiment are younger than the average female shopper. Additionally, this sample has more experience with the internet and online retail because of their age group and their affiliation with Georgia Institute of Technology. A sample that is more similar to the average female online shopper could create more accurate results.

Finally, the second part of the experiment occurred immediately after the first part of the experiment. In reality when a consumer buys an article of clothing online a few days pass before the consumer receives the clothing purchased. The time lapse between the purchase and the delivery of the clothing can affect the consumers' original perceptions. Future research should occur across a seven to ten day time span to gain more realistic results for fit satisfaction, purchase intent, likelihood to return, brand and quality perception.

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APPENDIX

Appendix A: Online Survey

Shopping Research Study Final:

Imagine that you have been given cash to shop for a pair of jeans. You have chosen to shop for these pants online. You have found a pair of jeans that you really like, but now you need to choose the size to make the purchase. When making your choice the factors in your decision should be focused on fit. You have already decided that you like the style and color of jeans based on the picture you saw online. Please make your shopping decision based on how you would normally decide to purchase clothing online and how you would normally asses fit.

What size jeans would you like to purchase? 2, 4, 6, 8, 10, 12, 14

Thank you for making your clothing purchase. The next set of questions should be based on the purchase decision that you just made.

Confidence in Choice:
How confident are you in the decision you made about the size of jeans to purchase?
(1) No Confidence……(7) Completely Confident

Purchase Intent:
Would you actually buy this pair of jeans if you saw them in the store or online? (in a real scenario)
(1) Extremely Unlikely ……(7) Extremely Likely

Would you actively seek out these jeans in order to purchase them?

(1) Extremely Unlikely ……(7) Extremely Likely

How satisfied are you with the amount of information provided on the website?

(1) Completely Dissatisfied ……(7) Completely Satisfied

If you had to search again for clothes, what is the likelihood that you would use this site again?

(1) Extremely Unlikely ……(7) Extremely Likely

Quality Perception:
I believe the jeans I purchased will be:
(1) Very poor quality ……(7) Excellent quality

Return Likelihood:
What is the likelihood that you will return the jeans once you receive them? (Do not base this decision on style and color, as we are assuming that they are already to your liking)

(1) Extremely Unlikely ……(7) Extremely Likely

Generally, how difficult is it for you to find jeans that you are satisfied with?

(1) Extremely Difficult ……(7) Extremely Easy

Brand Perception:
The brand of jeans that you just purchased is a leader in the clothing industry for jeans.

(1) Strongly Disagree ……(7) Strongly Agree

Brand Perception:
Rate your perception of the popularity of the brand of jeans that you just purchased.

(1) Not at all popular ……(7) Very popular

What are the top 3 brand of jeans that you wear most?

How much do you usually spend on purchasing your jeans?

(1) $0-30 ……(7) Above $200

How many of your jeans are sized on the European sizing scale? (i.e. 25, 27, 29, 30,...)

(1) None of them, 0% ……(7) All of them, 100%

How many of your jeans are sized on the American woman's sizing scale? (i.e. 0, 2, 4, 6,...)

(1) None of them, 0% ……(7) All of them, 100%

Internet Usage:
How often do you use the Internet?

(1) Never ……(7) All the time

Online Shopping Familiarity:
How familiar are you with online clothing shopping?

(1) Not at all familiar ……(7) All the time

Internet Usage:
How often do you use the internet to shop for clothes?

(1) Never, 0% of the time I shop ……(7) All the Time, 100% of the time I shop

Internet Usage:
How often do you use the Internet for general shopping?

(1) Never, 0% of the time I shop ……(7) All the Time, 100% of the time I shop

Internet Usage:
How often do you use the internet to shop for jeans?

(1) Never, 0% of the time I shop ……(7) All the Time, 100% of the time I shop

How often do you shop for jeans in the store?

(1) Never, 0% of the time I shop ……(7) All the Time, 100% of the time I shop

Consumer Experience - Cognitive Effort:
I automatically know which brands of clothes to buys.

(1) Strongly Disagree ……(7) Strongly Agree

Consumer Experience - Cognitive Effort:
I am loyal to one brand of clothes.

(1) Strongly Disagree ……(7) Strongly Agree

Consumer Experience - Cognitive Effort
At the place of online purchase, I can visually detect my preferred brand without much effort.

(1) Strongly Disagree ……(7) Strongly Agree

How likely are you to purchase clothing in a store from a brand that you are not familiar with?

(1) Extremely Unlikely ……(7) Extremely Likely

How likely are you to purchase clothing in an online store from a brand that you are not familiar with?

(1) Extremely Unlikely ……(7) Extremely Likely

Consumer Experience – Analysis:
I enjoy learning about clothes

(1) Strongly Disagree ……(7) Strongly Agree

Consumer Experience – Analysis:
I will search for the latest styles in clothes before I purchase an item

(1) Strongly Disagree ……(7) Strongly Agree

Consumer Experience – Analysis:
I keep current on the latest fashion styles.

(1) Strongly Disagree ……(7) Strongly Agree

Consumer Experience – Elaboration:
I consider myself knowledgeable about fashion.

(1) Strongly Disagree ……(7) Strongly Agree

Consumer Experience – Elaboration:
My knowledge of fashion helps me to understand the clothing fit and quality in this survey.

(1) Strongly Disagree ……(7) Strongly Agree

Consumer Experience – Elaboration:
I use my knowledge of fashion to verify that depictions of the clothing are accurate.

(1) Strongly Disagree ……(7) Strongly Agree

Purchase Decision Involvement:
In selecting from many types of brands of clothes available in the market, I would not care at all as to which one I buy

(1) Strongly Disagree ……(7) Strongly Agree

Purchase Decision Involvement:
In selecting from many types of brands of clothes available in the market, I would care a great deal as to which one I buy

(1) Strongly Disagree ……(7) Strongly Agree

Purchase Decision Involvement:
Do you think that the various types and brands of clothing available in the market are all very alike or are all very different in terms of QUALITY?

(1) Extremely different ……(7) Extremely alike

Purchase Decision Involvement:
Do you think that the various types and brands of clothing available in the market are all very alike or are all very different in terms of FIT?

(1) Extremely different ……(7) Extremely alike

Purchase Decision Involvement:
How important would it be to you to make a right choice when purchasing a clothing product online?

(1) Not at all important ……(7) Extremely important

Fashion Innovativeness:
In general, I am among the last in my circle of friends to buy a new fashion item when it appears

(1) Strongly Disagree ……(7) Strongly Agree

Fashion Innovativeness:
If I heard that a new fashion style was available in the store, I would be very interested to buy it

(1) Strongly Disagree ……(7) Strongly Agree

Fashion Innovativeness:
Compared to my friends I own few fashionable items

(1) Strongly Disagree ……(7) Strongly Agree

Fashion Innovativeness:
I will buy a new fashion item, even if I have not heard of it yet

(1) Strongly Disagree ……(7) Strongly Agree

Fashion Innovativeness:
In general, I am the last in my circle of friends to know the names of the latest fashions and styles

(1) Strongly Disagree ……(7) Strongly Agree

Fashion Innovativeness:
I know the names of new fashion designers before other people do

(1) Strongly Disagree ……(7) Strongly Agree

Technology Innovativeness:
In general, I am among the last in my circle of friends to buy a new technology item when it appears
(1) Strongly Disagree ……(7) Strongly Agree

Technology Innovativeness:
If I heard that a new technology product was available in the store, I would be very interested to buy it Compared to my friends I own few tech items
(1) Strongly Disagree ……(7) Strongly Agree

Technology Innovativeness:
I will buy a new technology item, even if I have not heard of it yet
(1) Strongly Disagree ……(7) Strongly Agree

Technology Innovativeness:
In general, I am the last in my circle of friends to know the names of the latest technology products and innovations
(1) Strongly Disagree ……(7) Strongly Agree

Self Concept – Social Self:
Rate how often you think about each statement below:
I think about how my body looks to other people.
(1) Never ……(7) Always

Self Concept – Social Self:
I think about whether other people find me attractive
(1) Never ……(7) Always

Self Concept – Social Self:
I think about how others might judge my appearance
(1) Never ……(7) Always

Self Concept – Social Self:
I wonder what other people think of my appearance
(1) Never ……(7) Always

Self Concept – Social Self:
I WORRY about how others might judge my appearance
(1) Never ……(7) Always

Self Concept – Body Image:
My body is sexually appealing
(1) Strongly Disagree ……(7) Strongly Agree

Self Concept – Body Image:
I like my looks just the way they are
(1) Strongly Disagree ……(7) Strongly Agree

Self Concept – Body Image:
Most people would consider me good looking
(1) Strongly Disagree ……(7) Strongly Agree

Self Concept – Body Image:
I like the way I look without my clothes on
(1) Strongly Disagree ……(7) Strongly Agree

Self Concept – Body Image:
I like the way my clothes fit me
(1) Strongly Disagree ……(7) Strongly Agree

Self Concept – Body Image:
I dislike my physique
(1) Strongly Disagree ……(7) Strongly Agree

Self Concept – Body Image:
I am physically unattractive
(1) Strongly Disagree ……(7) Strongly Agree

Self Concept – Weight Conscious:
I constantly worry about being or becoming fat
(1) Strongly Disagree ……(7) Strongly Agree

Self Concept – Weight Conscious:
I am very conscious of even small changes in my weight
(1) Strongly Disagree ……(7) Strongly Agree

Self Concept – Weight Conscious:
I am on a weight loss diet
(1) Strongly Disagree ……(7) Strongly Agree

Self Concept – Weight Conscious:
I have tried to lose weight by fasting or going on crash diets
(1) Strongly Disagree ……(7) Strongly Agree

Age:
Are you a native English speaker?

Appendix B: Paper Survey

Post Purchase Analysis:

You have just purchased a pair of jeans and have now tried them on. Please answer the below questions based on your experience with your purchase and your experience trying on the jeans.

Purchase Satisfaction:

How satisfied are you in the decision you made about the size of jeans to purchase?

(1) Completely Dissatisfied ……(7) Completely Satisfied

What other information do you wish would have been provided to you on the website so that you could make the most accurate size decision?

Perceived Fit:

How satisfied are you with the FIT of your jeans?

(1) Completely Dissatisfied ……(7) Completely Satisfied

If you are not satisfied with the fit of your jeans, why are you not satisfied? Please explain.

Perceived Fit:

Please rate your satisfaction of the fit of the jeans on the following attributes:

Length

(1) Completely Dissatisfied ……(7) Completely Satisfied

Fit at Waist

(1) Completely Dissatisfied ……(7) Completely Satisfied

Fit at Hips

(1) Completely Dissatisfied ……(7) Completely Satisfied

Fit on Thighs

(1) Completely Dissatisfied ……(7) Completely Satisfied

Fit on Butt

(1) Completely Dissatisfied ……(7) Completely Satisfied

Comfort

(1) Completely Dissatisfied ……(7) Completely Satisfied

Overall Tightness

(1) Completely Dissatisfied ……(7) Completely Satisfied

The way it fits your body type

(1) Completely Dissatisfied ……(7) Completely Satisfied

Quality Perception:

How satisfied are you with the QUALITY of your jeans?

(1) Completely Dissatisfied ……(7) Completely Satisfied

Quality Perception:

I believe the jeans I purchased are:

(1) Very poor quality ……(7) Excellent quality

Return Likelihood:

What is the likelihood that you will return the jeans now that you have tried them on? (Do not base this decision on style and color, as we are assuming that they are already to your liking)

(1) Extremely Unlikely ……(7) Extremely Likely

If you are not sure if you would return, what other information do you need to make a decision?

Purchase Intent:

Would you actually buy this pair of jeans if you saw them in the store or online? (in a real scenario)

(1) Extremely Unlikely ……(7) Extremely Likely

Purchase Intent:

Would you actively seek out these jeans in order to purchase them?

(1) Extremely Unlikely ……(7) Extremely Likely

Brand Perception:

The brand of jeans that you just purchased is a leader in the clothing industry for jeans.

(1) Strongly Disagree ……(7) Strongly Agree

Brand Perception:

Rate your perception of the popularity of the brand of jeans that you just purchased.

(1) Not at all popular ……(7) Very popular

In the next part of the experiment your body dimensions will be measured and recorded to objectively evaluate the accuracy of the fit of the clothing item.

Waist Size, Hip Size, Butt Size, Out-seam Size, In-seam Size, Height, Weight

Appendix C: Experiment Informed Consent

Research Consent Form

You are being asked to be a volunteer in a research study.

Purpose:

The purpose of this study is to examine how people make ecommerce decisions. Approximately 360 people will participate in studies like this; approximately 120 people will participate in this study.

Procedures:

If you decide to be in this study, your part will involve participating in three phase of the study. The first phase will include a series of decisions in which you are asked to imagine that you are buying a product from a website. The second phase will include trying on the product you purchased and then answering a series of questions on your perception of your product choice. The final phase will include taking measurements of your body dimensions and images of your body (minus head) in the article of clothing.

Risks/Discomforts

We do not anticipate you will experience any risks or discomforts.

Benefits

Research is designed to benefit society by gaining new knowledge. For example, this research provides insights into how consumers make decisions in online settings. Though you may not receive any direct benefit from participating in this study, you will learn more about the kinds of research conducted by faculty and graduate students in the College of Management, and about the various topics in this particular session.

Compensation for Participating

You will receive $12 for taking part in this session. The session should take no more than forty-five minutes. If you decide at any point that you do not wish to continue participating, you may

leave with no negative consequences.

Confidentiality

The researchers will make every effort to protect your privacy. Your name will only appear on this consent form and in the records, so that you may receive your financial reward. Your responses will only be associated with a code number that we assign, but that number is not and will not be connected in any way with your name. Thus, your responses are anonymous. The data will only be accessible to the researchers. In any presentations, written reports, or publications, no one will be identifiable and only aggregated results will be presented.

To make sure that this research is being carried out in the proper way, the Georgia Institute of Technology IRB may review study records. The Office of Human Research Protections may also look at study records.

Costs to You

There are no costs to you.

In Case of Injury/Harm

If you are injured as a result of being in this study, please contact Shabnam Ghaffari at telephone (805) 729-2958. Neither the Principal Investigator nor Georgia Institute of Technology has made provision for payment of costs associated with any injury resulting from participation in this study.

Participant Rights

- Your participation in this study is voluntary. You do not have to be in this study if you don't want to be.
- You have the right to change your mind and leave the study at any time without giving any reason, and without penalty. You may skip over questions you do not want to answer, for any reason.
- Any new information that may make you change your mind about being in this study will be given to you.

- You will be given a copy of this consent form to keep.
- You do not waive any of your legal rights by signing this consent form.

Questions about the Study or Your Rights as a Research Subject

- If you have any questions about the study, you may contact Shabnam Ghaffari at telephone (805) 729-2958.
- If you have any questions about your rights as a research subject, you may contact Ms. Melanie Clark, Georgia Institute of Technology at (404) 894-6942.

If you sign below, it means that you have read (or have had read to you) the information given in this consent form, and you would like to be a volunteer in this study.

Participant Name

Participant Signature Date

Signature of Person Obtaining Consent Date

Appendix D: Interview Questions

1. Please tell me a little bit about your experiences working in fashion? What type of work did you do?
2. In your experiences, what were the factors that affected how consumers made clothing decisions?
3. Were you or your company able to influence consumer's decisions?
4. About what percentage of sales would be returned at the company that you worked for?
5. Why do you believe people return items?
6. What types of clothes were returned most often?
7. What types of clothes sold best online or in the store?
8. What sizes sold best online or in the store?
9. What were the factors that affected how consumers made clothing decisions online?
10. Are there any websites that you think represent clothing very well?
11. In your opinion, what could be done to help consumers make better decisions in online shopping environments?
12. Do you think there is a correlation between consumer satisfaction & return rate?

Appendix E: Interview Informed Consent

Web Based Research Consent Form

Project Title: **Will it Fit? Consumer Decision Making in Online Shopping Environments.**

Researcher: **Shabi Ghaffari**

Faculty Adviser: Nicholas Lurie

I am a student at Georgia Institute of Technology, and I am conducting interviews for my thesis. I am studying consumer decision making of clothing fit decisions in online shopping environments.

During this interview, you will be asked to answer some questions about your experiences working in the fashion industry. This interview was designed to be approximately a half hour in length. However, please feel free to expand on the topic or talk about related ideas. Also, if there are any questions you would rather not answer, please say so and we will stop the interview or move on to the next question, whichever you prefer.

The information from the interview will be shared in my thesis presentation and paper. This paper will be available on the internet. This research will make every effort to protect your privacy based on your choice of consent. You may choose to share your name and work experience, or you can choose to make your name and work experience confidential. If you choose to remain confidential then your name will only appear on the consent form and in the records. If you choose to remain confidential you will not be identifiable in any

presentations, written reports, or publications and only aggregated results will be presented. We do not anticipate you will experience any risks or discomforts.

Participant's Agreement:

My participation in this interview is voluntary. If, for any reason, at any time, I wish to stop the interview, I may do so without having to give an explanation.

The researcher has reviewed the individual and social benefits and risks of this project with me. The data will be used in a thesis project that will be publicly available at the Georgia Tech Library on the Georgia Tech Campus. I have the right to review, comment on, and/or withdraw information prior to the Thesis Project's submission. The data gathered in this study is confidential with respect to my personal identity unless I specify otherwise.

If I have any questions about this study, I am free to contact the student researcher Shabnam Ghaffari, at stghaffari@gmail.com or the faculty adviser, Nicholas Lurie at nicholas.lurie@mgt.gatech.edu. If I have any questions about my rights as a research participant, I am free to contact the chair of Institutional Review Board: Ms. Melanie Clark, at (404) 894-6942.

Statement of Consent: "I have read the above information. I have asked questions and have received answers. I consent to participate in the interview."

Click on the link below to indicate your consent and to indicate the type of consent:

Thank you. Shabnam Ghaffari

You may choose more than one statement below.

☐ I consent to participate in the interview

☐ I consent that my name may be publicized in addition to the interview.

☐ I consent that the companies that I have worked for may be publicized in addition to the interview.

☐ I consent to participate in this interview, but I would like my name and the companies I have worked for to remain confidential.

Appendix F: Content Analysis

Company:	Types of Products Sold:	Model Type:	Model Size:	Model's Face Included:	Model's Body Dimensions:	Size Guide:	Fabric Info:	Style Info:	Overall Rating:	Customer Ratings of Fit Measurements:
	0: Clothing 1: Clothing & Consumer Products	0: No Model 1: Human Model 2: Mannequin	0: No Model 1: Thin Model 2: Average	0: No 1:Yes	0: No 1: Yes	0: No 1:Yes	0: No 1:Yes	0: No 1:Yes	0: No 1:Yes	0: No 1:Yes
Amazon.com	1	1	2	0	0	1	1	1	1	0
Walmart.com	1	1	2	0	0	1	1	1	1	1
J.C. Penney Co. Inc	1	1	2	0	0	1	1	1	1	1
Victoria's Secret	0	1	1	1	0	1	1	1	0	0
Macy's Inc.	1	1	2	0	0	1	1	1	1	1
Target Corp.	1	1	2	0	0	1	1	1	1	0
Gap Inc. Direct	0	1	1	0	0	1	1	1	1	1
L.L. Bean Inc.	0	1	2	0	0	1	1	1	1	1
Overstock.com Inc.	1	1	1	0	1	1	1	1	1	0
Nordstrom Inc.	1	1	1	0	0	1	1	1	1	1
NeimanMarcus.com	1	1	1	1	0	1	1	1	0	0
Kohl's Corp.	1	0	0	0	0	1	1	1	1	0
Saks Direct	1	1	1	1	0	1	1	1	1	0
J. Crew Group Inc	0	1	1	0	0	1	1	1	0	0
American Eagle Outfitters	0	1	1	0	0	1	1	1	1	1
Urban Outfitters Inc.	0	1	1	1	0	1	1	1	1	1
Abercrombie & Fitch Co.	0	0	0	0	0	1	1	1	0	0
Ralph Lauren Media LLC	0	1	1	1	0	1	1	1	0	0
Coldwater Creek Inc.	0	1	1	0	0	1	1	1	1	0
Net-a-Porter LLC	0	1	1	0	0	1	1	1	0	0
Eddie Bauer	0	1	1	1	0	1	1	1	1	1
YOOX Group	0	1	1	0	0	0	1	1	0	0
RueLaLa.com	1	1	1	1	0	0	1	1	0	0
The Talbots Inc.	0	1	1	1	0	1	1	1	0	0
Aeropostale Inc.	0	1	1	0	0	1	1	1	0	0
Ann Taylor Stores Corp.	0	1	1	0	0	1	1	1	0	0
Gilt Groupe	1	1	1	1	1	0	1	1	0	0
Boston Proper Inc	0	1	1	1	0	1	1	1	0	0
Express LLC	0	1	1	0	0	1	1	1	1	1
dELIA's Inc	0	1	1	1	0	1	1	1	0	0
Bluefly Inc	0	2	1	0	0	1	1	1	1	0
Chico's FAS Inc	0	1	1	0	0	1	1	1	0	0
HauteLook	0	1	1	0	1	1	1	1	0	0
Karmaloop LLC	0	1	1	0	0	1	1	1	0	0
Hot Topic Inc	0	1	1	0	0	1	1	1	0	0
The Buckle Inc	0	0	0	0	0	1	1	1	0	0
Pacific Sunwear	0	1	1	0	0	1	1	1	0	0
Fossil Inc	0	1	1	0	0	1	1	1	1	0
Barneys New York Inc	0	1	1	0	0	1	1	1	0	0
New York & Co Inc	0	1	1	0	0	1	1	1	0	0
Guess? Inc	0	1	1	1	1	1	1	1	0	0
A/X Armani Exchange	0	1	1	0	0	1	1	1	1	0
Patagonia Inc	0	1	1	0	0	1	1	1	1	0
Bebe tores Inc	0	1	1	0	0	1	1	1	1	0
Levi Strauss & Co	0	1	2	0	0	1	1	1	1	1
The Wet Seal Inc.	0	1	2	0	0	1	1	1	1	0
Charlotte Russe	0	1	1	0	0	1	1	1	0	0
Kenneth Cole	0	1	1	0	0	1	1	1	0	0
Forever 21	0	1	1	1	0	1	1	1	0	0
The Timberland Co	0	0	0	0	0	1	1	1	1	0
Burberry Ltd	0	1	1	0	0	1	1	1	0	0
Eileen Fisher Inc	0	1	1	0	0	1	1	1	0	0

Company:	Customer Opinions:	Facebook "Like" Feature:	Share Feature:	Larger Images:	Zoom Features:	Image Views:	Lowest Size:	Largest Size:	Length Options:	Number of different Sizes:
	0: No 1:Yes	0: No 1: Yes	0: No 1: Yes	0: No 1:Yes	0: No 1:Yes	0: one view 1: Various Views 2: 3D Rotation			0: None 1: Short 2: Tall 3: Short & Tall	
Amazon.com	1	1	1	1	0	1	0	28	3	18
Walmart.com	1	0	0	1	1	1	2	32	3	18
J.C. Penney Co. Inc	1	1	1	1	1	1	0	20	3	11
Victoria's Secret	0	0	0	1	0	1	0	16	3	9
Macy's Inc.	1	0	1	1	1	1	0	19	0	13
Target Corp.	1	0	1	1	1	1	0	18	3	10
Gap Inc. Direct	1	0	0	1	1	1	32	20	3	12
L.L. Bean Inc.	1	0	1	1	1	1	4	20	3	9
Overstock.com Inc.	1	1	0	1	1	1	24	34	3	10
Nordstrom Inc.	1	0	1	1	1	1	00	12	3	9
NeimanMarcus.com	0	0	0	1	1	1	24	32	0	9
Kohl's Corp.	1	0	0	1	1	1	4	16	3	7
Saks Direct	1	0	0	1	1	1	25	32	3	8
J. Crew Group Inc	0	0	0	1	1	1	24	34	3	10
American Eagle Outfitters	1	1	0	1	1	1	00	18	2	11
Urban Outfitters Inc.	1	1	1	1	0	1	0	12	0	7
Abercrombie & Fitch Co.	0	0	1	1	0	1	'00	12	3	8
Ralph Lauren Media LLC	0	0	0	1	0	1	24	32	0	9
Coldwater Creek Inc.	1	1	1	1	0	1	4	16	3	7
Net-a-Porter LLC	0	1	1	1	1	1	24	32	0	9
Eddie Bauer	1	0	1	1	1	2	2	20	3	10
YOOX Group	0	1	1	1	1	1	00	10	0	7
RueLaLa.com	0	1	1	1	1	1	24	32	3	9
The Talbots Inc.	0	0	0	1	0	1	2	20	3	10
Aeropostale Inc.	0	0	1	1	0	1	00	18	3	11
Ann Taylor Stores Corp.	0	0	0	1	1	1	00	12	1	8
Gilt Groupe	0	1	1	1	1	1	00	12	0	9
Boston Proper Inc	0	0	0	1	1	1	2	16	3	8
Express LLC	1	0	1	1	1	1	0	14	0	8
dELIA's Inc	0	0	0	1	1	1	00	19	3	12
Bluefly Inc	1	1	1	1	1	1	0	16	0	9
Chico's FAS Inc	0	0	0	1	1	1	000	4.5	3	12
HauteLook	0	1	1	1	1	1	00	12	0	9
Karmaloop LLC	0	1	0	1	0	1	25	34	0	9
Hot Topic Inc	0	0	1	1	0	1	0	19	0	13
The Buckle Inc	0	1	1	1	0	1	25	34	2	10
Pacific Sunwear	0	1	1	1	0	1	0	13	3	8
Fossil Inc	1	1	0	1	1	1	25	32	3	8
Barneys New York Inc	0	1	1	1	1	1	24	31	0	8
New York & Co Inc	0	0	1	1	0	1	0	18	0	10
Guess? Inc	0	1	0	1	0	1	24	32	0	9
A/X Armani Exchange	0	0	1	1	1	1	00	14	0	9
Patagonia Inc	1	0	1	1	1	1	24	32	0	9
Bebe tores Inc	1	0	1	1	0	1	24	31	0	8
Levi Strauss & Co	1	1	0	1	1	1	24	31	3	8
The Wet Seal Inc.	1	1	0	1	1	1	0	24	0	14
Charlotte Russe	0	0	1	1	0	1	0	10	0	6
Kenneth Cole	0	1	0	1	1	1	25	31	0	7
Forever 21	0	0	1	1	1	1	24	30	0	7
The Timberland Co	1	0	0	1	1	1	27	35	0	9
Burberry Ltd	0	0	0	1	0	1	25	31	0	7
Eileen Fisher Inc	0	0	0	1	1	1	2	24	1	12

Company:	Lowest Price:	Highest Price:	Gender:	Age:	Return Policy: (Number of Days)	2009 Sales:	2009 Growth Rate:	Monthly Visits:	Monthly Unique Visitors:	Conversion Rate:
			0: Women Only 1: Men & Women	0: Adults Only 1: adults & kids 2: adults, kids & teens 3: Adults & Teens 4. Teens Only	0: Unlimited 1: less than 20 2: 30 3: 45/60 4: 90 5: above 90					
Amazon.com	29.99	380	1	2	2	24510	27.86	30492800	62518000	3.6
Walmart.com	9	20	1	2	4	35000	19.76	86715000	30581000	2.41
J.C. Penney Co. Inc	30	79.9	1	2	4	15000	0	27400000	10843000	2.88
Victoria's Secret	39.5	79.5	0	1	4	14450	8.4	17500000	7986564	5
Macy's Inc.	24.98	225	1	2	0	12438	19.6	24340000	10477000	2.9
Target Corp.	19.99	34.99	1	2	4	12092	0	53701720	29692577	1.6
Gap Inc. Direct	49.5	79.5	1	2	3	11200	8.74	28932000	7651000	3
L.L. Bean Inc.	29.95	49.95	1	2	0	10644	2	7750000	1882000	8.2
Overstock.com Inc.	16.99	186.99	1	2	2	87676	5.65	24069147	10895019	2.5
Nordstrom Inc.	22.9	345	1	2	2	78410	14.27	9930000	3743000	2.6
NeimanMarcus.com	98	235	1	2	5	49600	-12.13	4909000	2529000	1.05
Kohl's Corp.	36	50	1	2	0	49150	38.06	21437000	9718000	2.25
Saks Direct	118	490	1	2	0	43002	13	4300000	1041000	2
J. Crew Group Inc	79.5	125	1	2	3	34668	2.51	3426000	920000	5.5
American Eagle Outfitters	39.5	79.5	1	3	0	34430	12.15	57252257	3162250	3.4
Urban Outfitters Inc.	48	229	1	3	2	32368	18.79	5600000	1536000	3.98
Abercrombie & Fitch Co.	68	98	1	4	3	24940	-7.97	7473000	1285611	2.2
Ralph Lauren Media LLC	44.99	1298	1	2	3	20000	11.11	3700000	3400000	2.47
Coldwater Creek Inc.	59.95	84.95	0	0	0	19807	-6	3967000	1764000	2.1
Net-a-Porter LLC	150	1235	0	0	1	18285	15	4000000	112000	2
Eddie Bauer	39.5	68	1	0	1	18100	-5.7	3000000	694554	4.2
YOOX Group	30	540	1	2	1	16950	44.43	6400000	112668	0.75
RueLaLa.com	59	250	1	2	2	15700	96.25	5200000	1408000	2.3
The Talbots Inc.	89	99	0	0	4	14815	3.77	2490000	1450000	4.19
Aeropostale Inc.	16	49.5	1	4	0	12900	48.11	4394434	2363763	2.4
Ann Taylor Stores Corp.	59.99	98	0	0	3	11200	-20	3215000	1262000	1.67
Gilt Groupe	40	300	1	2	1	97000	66.67	3243000	650000	1.65
Boston Proper Inc	79	129	0	0	0	95700	9.99	587000	195000	6.83
Express LLC	49.9	98	1	3	4	95000	238.08	5000000	3000000	1.8
dELIA's Inc	39.5	49.5	0	4	3	86959	4.08	1119087	711717	2.35
Bluefly Inc	24.79	428.4	1	3	3	81222	-15.22	1228233	698732	2.15
Chico's FAS Inc	65	89	0	0	4	61524	39	1364000	489201	1.5
HauteLook	49	300	1	2	1	61500	50.15	3561000	1243000	2
Karmaloop LLC	40	182	1	3	1	60000	50	3700000	430525	1.5
Hot Topic Inc	29.5	34	1	4	3	59390	29.82	6689896	3064893	1.3
The Buckle Inc	32.49	235	1	3	3	52300	45.28	2160000	453000	2.3
Pacific Sunwear	39.5	75	1	3	3	51300	16.33	2349458	1370009	1.65
Fossil Inc	88	128	0	3	4	50250	9.96	2600000	351594	1.9
Barneys New York Inc	165	795	2	3	2	45000	30.21	1000000	600000	1
New York & Co Inc	39.95	69.95	0	0	3	39617	-12.18	688000	417000	10
Guess? Inc	79	158	1	3	2	38184	-3	1700000	535253	1.85
A/X Armani Exchange	88	135	1	3	2	36100	-3	550000	266620	2.5
Patagonia Inc	79	79	1	0	0	28938	5	400000	134087	3.6
Bebe tores Inc	79	149	0	3	1	26150	-10.81	1129948	708162	1.6
Levi Strauss & Co	44	128	1	2	3	24500	20.81	1194000	691000	1.75
The Wet Seal Inc.	29.5	41.5	1	3	1	24062	10.53	1964447	1090356	1.5
Charlotte Russe	29.5	39.5	0	3	2	20400	85.45	2400000	896360	1.2
Kenneth Cole	59.98	79.99	1	2	2	17300	-8.69	320000	140896	3.3
Forever 21	9.5	27.8	1	4	2	15364	2	4368498	2119560	0.7
The Timberland Co	69.5	69.5	1	2	3	15000	15.38	778000	221000	1
Burberry Ltd	195	325	1	2	2	14300	5.93	194222	130803	1.4
Eileen Fisher Inc	158	168	1	0	2	14000	28.44	176000	104000	2.19

Company:	Average Ticket:	Year Launched	Browser Satisfaction:	Satisfaction Change 2009 to 2010:	Purchase Intent Score:	Multichannel Value Index:	Percent Female:	Percent Age 24 or less:	25-34:	35-44:	Median Household Income:
											0 = 60,001-100,000, 1 = 100,000+
Amazon.com	185	1995	86	2	92	89	54	16	23	25	0
Walmart.com	140	2000	80	3	89	85	58	16	23	25	0
J.C. Penney Co. Inc	160	1994	80	3	88	84	63	15	22	25	0
Victoria's Secret	125	1998	79	1	86	82	65	19	28	25	0
Macy's Inc.	140	1998	75	4	84	80	63	16	24	25	0
Target Corp.	120	1999	78	3	88	83	60	16	24	26	0
Gap Inc. Direct	110	1997	77	5	82	80	66	17	29	27	0
L.L. Bean Inc.	129	1995	82	4	86	84	60	13	20	27	0
Overstock.com Inc.	121	1999	77	7	81	79	60	15	23	25	0
Nordstrom Inc.	238	1998	78	4	84	81	64	16	25	26	0
NeimanMarcus.com	410	1999	78	8	79	78	63	17	26	26	0
Kohl's Corp.	85	2000	80	4	89	84	64	14	23	27	0
Saks Direct	400	2000	77	4	79	78	63	17	26	26	1
J. Crew Group Inc	150	1996	75	6	76	75	64	18	29	27	0
American Eagle Outfitters	145	1998	78	6	83	81	63	22	26	24	0
Urban Outfitters Inc.	121	NA	74	7	77	75	63	25	30	20	0
Abercrombie & Fitch Co.	125	1998	79	9	81	80	59	23	26	24	0
Ralph Lauren Media LLC	200	2000	79	7	83	81	58	19	27	25	0
Coldwater Creek Inc.	160	1999	80	5	82	81	72	10	15	23	0
Net-a-Porter LLC	190	2000					67	20	31	23	1
Eddie Bauer	120	1996	77	5	81	79	63	13	21	28	0
YOOX Group	300	2000	71		69	70	61	19	29	25	1
RueLaLa.com	110	1999	73		72	72					
The Talbots Inc.	118.26	1999					66	13	19	25	1
Aeropostale Inc.	90	2005					64	21	24	28	0
Ann Taylor Stores Corp.	175	2000					69	15	27	29	0
Gilt Groupe	150	2007					63	18	31	26	1
Boston Proper Inc	180	1998					68	14	20	29	0
Express LLC	90	2008					64	22	33	23	0
dELIA's Inc	81.56	1998					70	23	26	23	0
Bluefly Inc	257.64	1998					66	18	29	25	1
Chico's FAS Inc	175	2000					70	11	17	23	0
HauteLook	100	2007					72	15	27	24	0
Karmaloop LLC	90						55	26	30	20	0
Hot Topic Inc	57.84	1998					63	24	25	24	0
The Buckle Inc	88	1999					61	21	27	23	0
Pacific Sunwear	75	1999					61	24	24	23	0
Fossil Inc	90	1996					61	18	26	25	0
Barneys New York Inc	375	2004					62	20	31	24	1
New York & Co Inc	43	1999					70	10	16	21	0
Guess? Inc	110	1999					62	24	30	22	0
A/X Armani Exchange	220	1999					52	24	29	23	0
Patagonia Inc	140	1998					52	17	27	26	1
Bebe tores Inc	110	1998					67	23	29	23	0
Levi Strauss & Co	80						56	18	24	24	0
The Wet Seal Inc.	66	1999					69	27	27	21	0
Charlotte Russe	45	2007					70	26	29	21	0
Kenneth Cole	140	1999					55	19	31	25	1
Forever 21	50						68	27	29	20	0
The Timberland Co	160	2001					51	19	25	25	0
Burberry Ltd	400						60	23	29	26	1
Eileen Fisher Inc	306	2004					69	15	19	25	1